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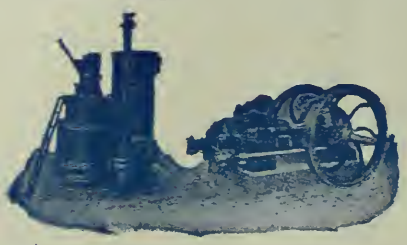

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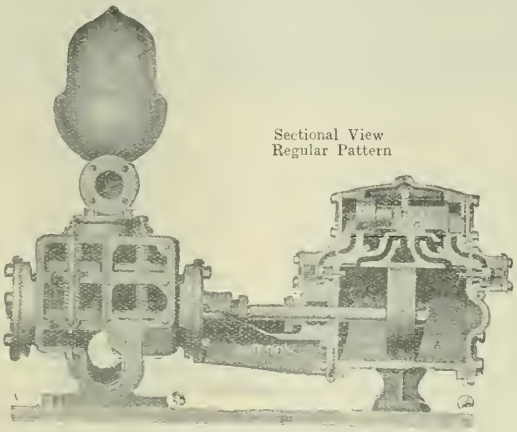

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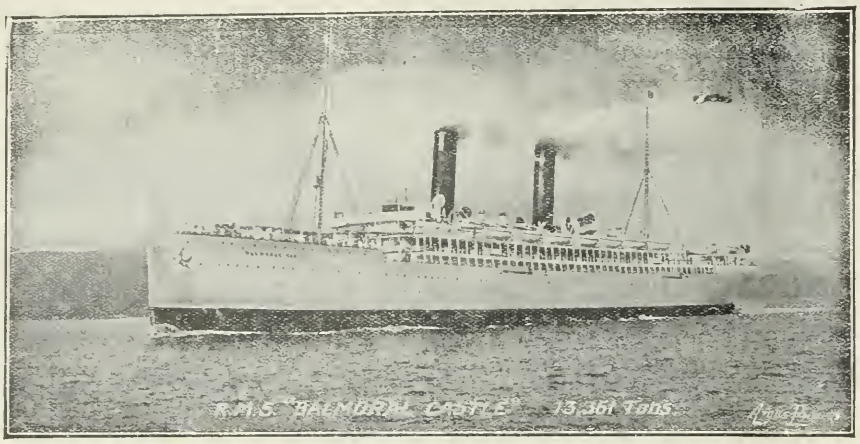

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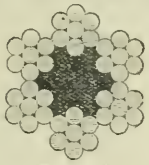

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Fig. 2a. WINDING.

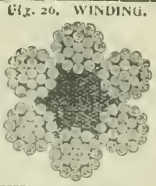

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Fig. 4. WINDING.

Fig. 13. SINKING.

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Fig. 13 for Sinking & Fig. 11b for Cranes, &c., are non-twisting.

Fig. 11b. CRANE &c.

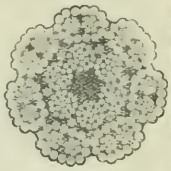
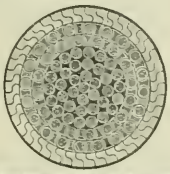


Fig. 15a. WINDING.



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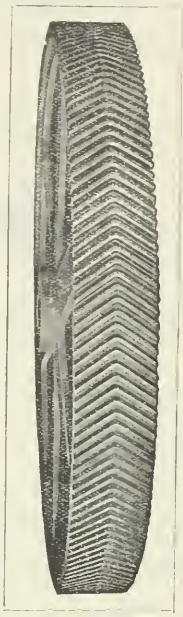

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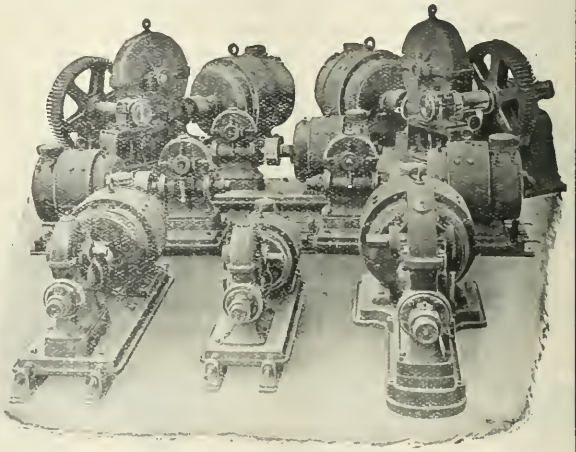

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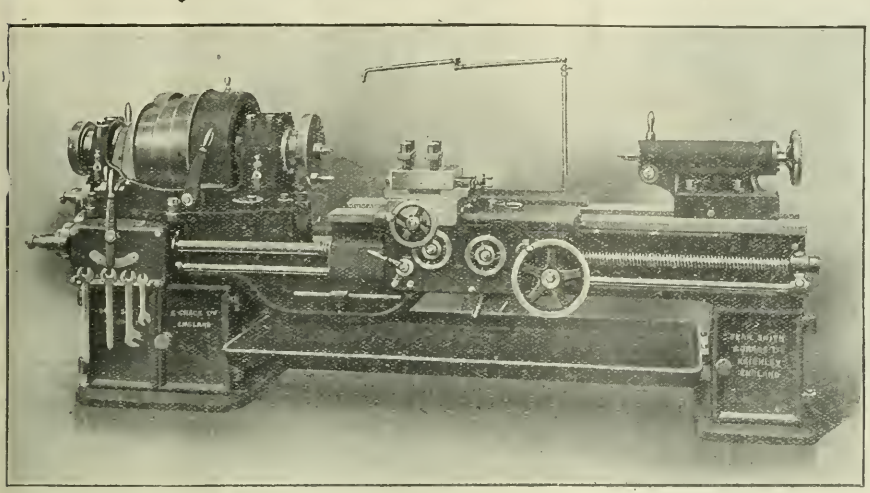

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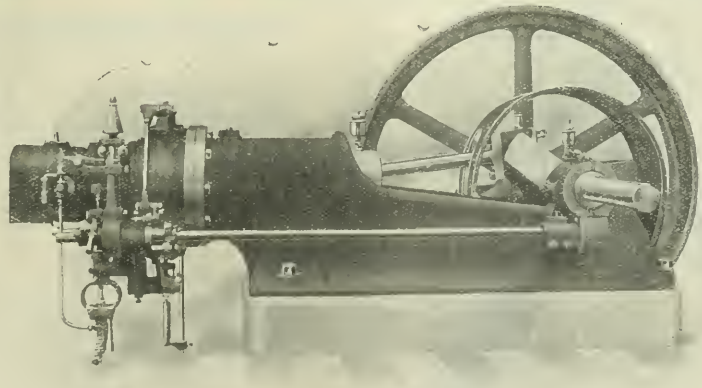

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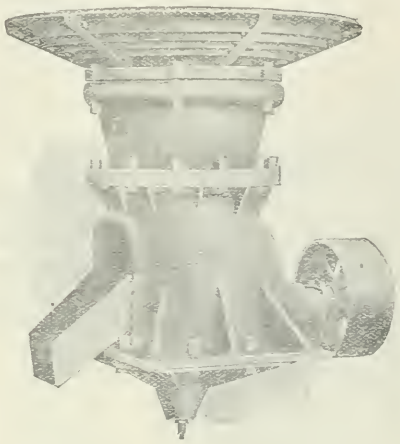

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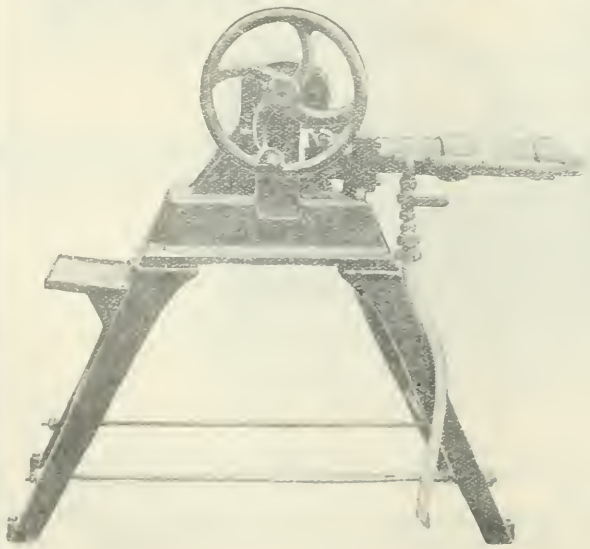

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South African Mines, Commerce and Industries.

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Notes and News.

Roberts Victor.

The secretary writes:—"Owing to reef troubles during the month of November, only 12,208 loads of yellow ground and 4,184 loads of old tailings were washed, yielding 4,643¾ carats of diamonds. In order to enable the manager to deal effectively with reef, washing was discontinued on 1st December for a period of about three weeks."

* * * *

Present Position of the Coal Industry.

There was a fairly marked improvement in the coal output of the mines of the Union during October. The value of aggregate production at pit's mouth was £7,000 greater in the Transvaal, £2,500 higher in the Free State, and £3,391 greater in Natal. The total output for the Union was 718,574 tons, valued at £174,978, as compared with 665,192 tons, valued at £161,979, in September. In the Union there were sixty-four collieries producing—thirty-two in the Transvaal, eight in the Cape, five in the Orange Free State, and nineteen in Natal. The Transvaal sold 426,277 tons of the total at an average price of 4s. 3·95d. per ton. The value, at £92,269, represents well over one-half of the value of production of the whole Union. Seventeen of the Transvaal thirty-two collieries were situated in the Middelburg area, and they sold 318,273 tons for £68,167, or 4s. 3d. per ton. The output of Natal realised 5s. 6·7d. per ton, and since 238,283 tons were sold, the total value of the Garden Colony's production was £66,241. The Orange Free State sold 47,451 tons for £12,777, and the Cape 6,563 tons for £3,691. It is to be observed that in the Transvaal the price continues to decline, the average selling value at pit's mouth for October, 4s. 3·95d. per ton, being the lowest on record. From June to December, 1910, the price was first under 5s.; in 1911 it was 4s. 8·39d., and in July last 4s. 5·79d. per ton. These figures are especially interesting in view of the fact that the reorganisation of the Coal Owners' Association, or rather renewal of the combine, is understood to be approaching finality in some form or other.

* * * *

Development in October.

Taking both productive and non-productive gold mines in the Transvaal during October, we find that in main drives and crosscuts the total development footage was 50,931 feet, as compared with 49,249 feet in September. In main shafts the footage was slightly less, and of "other development" there were 27,615 feet as against 30,488 feet in the preceding month. By far the greater amount of this work was, of course, carried out in producing gold mines on the Rand. There were seven developing non-producing mines on the Main Reef series, where 904 feet of shaft sinking, 2,727 of main drives and crosscuts, and 1,340 feet of "other development" were carried out. Of the other non-producing mines, two in the Pilgrims Rest district drove 1,053 feet in main drives and crosscuts. There were in use in the Transvaal 5,614 rock drills. Of these, 5,534 were employed on the Witwatersrand.

* * * *

The Bucks Reef to be Tributed.

As has been generally anticipated for some time past, the management of the Bucks Reef Gold Mines has found it inadvisable to continue to work the mine under the scheme of administration the company has enjoyed since flotation in 1909. The property originally was opened up by Mr. G. W. Wood and during his ownership and also under that of the Bucks Reef Syndicate the mine yielded some phenomenal returns. For the first few months of working under the auspices of the Bucks Reef Gold Mines, with a capital of £150,000, the company earned profits of from two to three thousand pounds per month from ore worth about £8 per ton. Latterly, however, monthly operations have either resulted in a small loss or a very meagre margin of profit, and the directors accordingly have decided

to meet the situation in the best way practicable and lease the mine on tribute. A notice to this effect appears in our advertisement columns this week.

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A Copper Discovery.

News of an important discovery of copper in German South-West Africa reaches us. An expedition recently left the Rand for that territory, headed by some experienced prospectors, and financed by a local syndicate. The information available is very meagre, but the find is said to be a promising one.

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The November Output.

Returns received by the Chamber of Mines up to date indicate that the November gold output will probably exhibit a small decline in comparison with the declaration for October. Profits, too, it may be anticipated, will be proportionately smaller, but the decreases so far announced appear to be due solely to the fact that there was one less working day last month than in October. The East Rand Proprietary's November output was 58,071 ozs. and that of October 57,956, whilst the profits are £90,502 and £91,016. The City and Suburban's output and profit are each a little lower, whilst the New Kleinfontein's output is slightly less and the profit a little higher. Brakpan Mines records a slightly less output and a correspondingly smaller profit. It looks as if the increases would well nigh counterbalance the declines. In any case the fluctuation is not likely to be a large one.

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Waterberg Activity.

According to a correspondent of the *Zoutpansberg Review*, there is quite a revival in progress in the activity of the tin fields beyond Potgietersrust. Since the departure of Colonel Scoones, who was reported to have caused quite a stir among the claim holders and prospectors in these parts, affairs have been extremely dull. The correspondent referred to writes, *inter alia*, as follows:—"According to well-founded report, quite a number of claims have been taken up on option and licences paid in addition of two farms. The claims are situated on Appingendam, Delagoa and Bellevue, the farms are "Leyden" and "Kranskloof." Finch Smith's 100 claims, Pat Boyle's 675, Zaverdino's, Reid's, Trevethen's, Wilson's and Black's are mentioned amongst the number. Pat Boyle has sold his plant, mules, cart and camp as it stands for a good price to Mr. H. Lyons, the mining engineer who recently put through the "Weenen Phosphate" in Natal. Mr. Lyons seems to be associated in some way with the Northern Transvaal Lands. Anyhow he has the best kind of financial support at his back. Mr. Lyons himself stated that his idea was to put down a series of borcholes 800 to 1,000 feet. He will handle the farm "Kranskloof." The option on the farm Leyden was secured by Pat Boyle from the owner, Mr. W. E. Wilson, of Pretoria, and will be financed by a London company. I am told that Colonel Scoones, the consulting engineer who spent a month at Boyle's camp about three or four months ago, now in London, is a director of the company who will finance Pat to develop Leyden, which has always been spoken of as a rich tin farm. A new camp and an up-to-date plant is to be forwarded at once." Things are evidently moving very fast. We understand, by the way, that a large party of engineers and others will accompany Mr. Lyons to-morrow on a visit to the properties in which he is interested on Appingendam.

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Exhibition of Mining Machinery.

The Mining Machinery Exhibition to be held at the Royal Agricultural Hall, Islington, London, N., from May 29th to June 7th, 1913, is the fifth of the series organised by Messrs. Montgomery. A strong association of manufacturers representing leading firms in the industry has been formed, and these exhibitions have now become quinquennial, so that after next year's there will not be another exhibition held until 1918. This arrangement both prevents a tax on the manufacturer through the multiplicity of exhibitions, and enables each to be thoroughly representative. Already three-fourths of the available space has been taken up, whilst a strong consultative committee has been formed to supervise demonstrations of life-saving, etc., apparatus and devices, organise lectures on subjects of immediate importance to those engaged in mining operations, secure the attendance of British, Colonial and foreign representatives of mining institutes, etc. The committee consists of Mr. W. E. Garforth, LL.D. (President of the Institution of Mining Engineers); Sir Ralph Ashton; Professor J. S. Haldane, F.R.S.; Sir Henry Hall, I.S.O.; Sir Thomas H. Holland, K.C.I.E., F.R.S.; Mr. A. M. Lamb, M.Inst.M.E.; Mr. H. C. Peake, Past President, Inst.M.E.; and Mr. H. L. Sulman, Past President, I.M.M. Lectures have already been promised by Sir Henry Cunynghame, K.C.B., Professor Haldane, F.R.S., and other well-known authorities. The offices of the Exhibition are at 43, Essex Street, Strand, London, W.C.

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Mining Statistics.

The latest British Government's Report on Mines and Quarries gold shows an increase of 7,347 kilograms, as compared with 1909, the total output being 693,376 kilograms (22,292,535 ozs.), of which the value is estimated at over 94⅝ millions sterling. The British Empire supplied nearly 57 per cent. of the output; Australia contributing 12 1-5 per cent., South Africa nearly 34 per cent., and Canada, India, New Zealand and Rhodesia combined, over 9¼ per cent. of the total. The United States contributed nearly 21 per cent., and Mexico and Russia combined over 14½ per cent. In the case of iron, the United States with an output of nearly 27⅞ million tons is considerably ahead of any other country. The German Empire with over 8 million tons, Great Britain with over 5 million tons, France with over 5 million tons, and Spain with nearly 4½ million tons come next. It is important to point out that the quantities of iron, and indeed the quantities of the other metals, are those which are considered obtainable from the ores raised in the countries in question, and must not necessarily be taken as a measure of their metallurgical industries. The total value of the figures shown in the table may be roughly taken as representing about 910 millions sterling. As to accidents, taking coal mines for which the figures are fairly complete, it will be seen that the death-rate of the United Kingdom was 1·70, and for the British Empire 1·79; while for Austria it was 1·17, for Belgium ·95, for France 1·08, for Japan 2·23, for Germany 1·95, and for the United States 3·79. The death-rate for foreign countries generally was 2·45. In the case of gold mines, complete figures are only available for the British Empire. They show a decrease in the death-rate from 4·38 in 1909 to 3·55 in 1910.

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Mr. Marriott on Sand-Filling.

At a recent meeting of the Institute of Mining and Metallurgy held in London, Mr. H. F. Marriott, of the Central Mining and Investment Co., contributed some interesting remarks on a paper entitled "A System of Sand-Filling used on the Rand," by R. E. Sawyer, Associate. Mr. Marriott remarked that Mr. Sawyer's method is probably limited in its usefulness to the Rand, and then only to certain of the smaller mines: first, on account of its being necessary for the success of the operations that they should be conducted in an atmosphere capable of drying the daily supply of tailings with extreme rapidity; and, secondly, on account of the necessarily limited tonnage available for delivery into the mine, even under these favourable atmospheric conditions. The general scheme of sand-filling as now practised on the Rand was introduced on to the gold mines from Silesia. "This modification," said Mr. Marriott, "can scarcely be termed an invention, and is better described as a practical illustration of another method of application, as the alternative of sending the dry sand down the shafts, and then mixing with water for transference along the levels to the stopes to be filled, was thoroughly discussed before the water-borne system was put into general use. The success of the de-cyanidation claimed for the process by the exposure of the sand to the sun and air for a short period, thus obviating the necessity for the

employment of artificial neutralizing agents, is a very interesting point, and it will be of interest to hear the opinion of metallurgists on the results obtained. The limiting factor in this process is, of course, the amount of dry sand available. The daily amount lowered at the mine quoted is given as 400 tons per shift. This may be taken as a comparatively small installation in Rand practice, as some of the mines which have adopted the water-borne sand filling process deliver between 1,000 and 2,000 tons per day, and even then are not working full time. As against the intermittent working of the dry delivery and the insecurity of the dry sand supply, there has to be reckoned the saving of cost of pumping water from the bottom of the shaft to the surface. One of the reasons for adopting the wet process throughout was that there was known to be a large amount of gold contained in the dumps from which the stock of filling material was to be taken, and it was considered that by washing these down with water and by keeping the water separate from the rest of the pumping operations on the mine it might be found possible to recover a profitable proportion of this gold on the return of the water to the surface, or, alternatively, that the material extracted from the dumps for sending below might be treated *en route* by cyanide, and that the portion of the contained gold still amenable to further treatment might be extracted, before the sands were finally buried in the depths from which they originally came. Either of these courses necessitates the wet treatment, and other requirements have to be considered before faith is pinned to one process or the other."

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Henderson's Transvaal Estates: Reorganisation.

At a meeting of Henderson's Transvaal Estates, Ltd., in London, last week, a scheme was unanimously agreed to for the reorganisation of the company. Lord Cranmore, who presided, announced the company's intended participation in a chemical scheme at Tweefontein and its co-operation with the Association Portland Cement Company in establishing a new cement factory in South Africa, orders for large plant for which have been placed.

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Deep Cold Mining in America and Africa.

Here on the Witwatersrand profitable operations are proceeding at much greater depth than that usual elsewhere, and schemes for the carrying on of mining at 7,000 feet or more are under consideration. Our contemporary remarks: " It naturally commands capital and courage to sink deep shafts through broad areas of comparatively unproductive territory with only a possibility that at depth deposits of sufficient value and magnitude will be found to reward the enterprise and initiative of operators." Herein, of course, lies the whole difference between the mines of the Witwatersrand and mines in other parts of the world. On the Main Reef series there is the absolute assurance of encountering reef matter at a depth which can be estimated with a very fair degree of accuracy. Moreover, in fully nineteen cases out of twenty the ore has been found to be of profitable value. In other mining fields sinking deep shafts to intersect ore bodies at considerable depth is, of course, a much more speculative operation. In the United States of America deep gold mining practice has not been developed to the high stage of efficiency prevailing on the Witwatersrand, despite all that may be said to the contrary. An authority, writing in a Salt Lake City contemporary on the subject of deep gold mining, remarks: " Paramount interest naturally centres on the Amador portion of the belt, where the deepest gold mines in America are operated. First and foremost stands the Kennedy, the largest producer in California. This property has been developed to a vertical depth of 3,550 feet by a three-compartment shaft, and arrangements have been recently made to sink several hundred feet deeper. In the lowest workings the vein shows about fifteen feet of milling ore, and it is expected to eventually intersect the footwall ledge at a depth of 4,400 vertical feet. This is the principal ore body and occurs in schistose greenstone."

TOPICS OF THE WEEK.

THE MUNICIPAL GAS ENGINES.

THERE is a growing feeling in engineering circles that something ought soon to be decided with reference to the fate of the derelict Johannesburg Municipal gas engines. It will be remembered that one of the conditions of the compromise between the Johannesburg Municipality and Messrs. Beardmore & Co. was that the latter should be granted a three months' option of purchasing the gas plant for the sum of £5,000. The option expired in July last, and, in consequence, the whole plant became the property of the Council. The Tramway and Lighting Committee then decided to ask Professor Dobson to report as to the value of the plant. After a preliminary investigation, Professor Dobson asked the Committee to vote a sum of 200 guineas for a thorough investigation. The Committee approved of his suggestion, the sum was voted by the Council, and endeavours are now being made to turn the engines to account. Something more than this, it is generally thought, ought to be done. Since the debacle of the plant, some years ago, enormous strides have been made in the application of producer gas and internal combustion engines. Elsewhere in this issue extracts are printed from an exhaustive pamphlet on the subject, issued by the United States Bureau of Mines. In England, Germany and America, great strides have been made in this direction of late; and it is not unreasonable to hope that, in the light of recent progress and research, it would be possible now to decide the value, if any, of the costly machinery lying at the Power Station. We have, of course, nothing but praise for the efforts being made by Mr. Dobson to turn the plant to some account, but it seems to us that something further might be done. For instance, Rand engineering circles can to-day boast a considerable amount of engineering talent that has specialised in the direction of producer gas and gas engines. The Municipality would, to our mind, be well advised to enlist that specialised knowledge and ability in its service in the shape of an advisory committee of experts to advise it in regard to the possibilities of the plant. The attitude of those who could give the Council advice on the subject has hitherto been one of natural reluctance to interfere in a very unfortunate business which was no concern of theirs. Nothing but the express invitation of the Town Electrical Engineer and the Municipality is likely to alter this attitude, but that invitation, once freely extended, it cannot be doubted that a very valuable committee could be persuaded to volunteer their services to the town. It is hardly to be hoped ,of course, that the report of such a body would be, or would pretend to be, final. The utmost that could be expected would be a recommendation that the final decision be left to some one or more impartial experts, drawn from oversea. The committee could be trusted to decide best to whose judgment the final decision should be left; and the Council would doubtless see the wisdom of their recommendations. The committee could be large enough and representative enough to be above criticism, and its wide representation would ensure that all phases of the problem presented by the present state of the gas engine plant at the Power Station would be thoroughly investigated. In throwing out this suggestion, we are anxious to make it clear that no imputation of any sort is cast on the efforts of the municipal engineers to turn the plant to some account, and that it would be idle to guess what the result of such an enquiry would be. The point is that the gas engine plant is still lying derelict, that it is not devoid of possibilities of working, and that a committee of local experts could be got together for the asking by the Municipality, competent to report fully and at no cost to the town on the position to-day. The Municipality has, possibly, something to gain, and certainly nothing to lose, from the adoption of the suggestion.

THE GOLD FIELDS' REPORTS.

THE Consolidated Gold Fields have of late years been going in for the policy known as geographical distribution of capital, and with varying results. As a fact the Rand is still by far the best field the company has struck, and we would be more than human if, in face of the last balance sheet and report issued by the company, we refrained from reminding it of the fact. The Simmer and Jack East has, of course, been a big loss and disappointment, but the other Rand holdings of the company, mainly deep levels acquired on bed-rock terms, have proved handsome investments. The report refers to some of the principal American interests and the Gold Fields Company's American representative deals in detail with the outlook of some individual concerns. The interests are mainly power and mining companies. In connection with the recent sale of the Simmer and Jack East area to the Knights Deep it is interesting to note how the Gold Fields will stand in the matter, inasmuch as it was guarantor, principal and interest, of a large amount of Simmer East First Debentures, and it has still nine years' interest commitment to run on an amount of Simmer East Second Debentures. A paragraph in the Gold Fields' report deals with this matter and states that such guarantees, which it appears amount to about £420,000. "indicates a loss which will be met out of the reserve account, whilst any part of such loss which may be recouped in the future will be recredited to this account." The reserve fund, it may be recalled, stands at £1,000,000 separately invested in high-class Government and railway securities. Some years ago £1,000,000 of £2,000,000 that then stood as invested in high-class securities as "reserve" was transferred into the company's own business. A further £800,000 which was set aside subsequently out of profits as a reserve "provision against investments in crushing mines," is likewise employed in the company's business. It may be recalled as well that the Gold Fields has raised further working resources in addition to using the large sums of reserve and special reserve referred to. In February, 1911, it issued £1,250,000 of its Six per cent. Second Preference shares. Undoubtedly to a great extent the Gold Fields investment in West Africa holds out little hope of becoming valuable. The variety of Rhodesian interests spread over a very large field, and the lock-up of money in properties in course of development calls for the exercise of patience. The same is true with regard to American interests acquired. In so far, however, as it deals with the Rand the report is most satisfactory, though, as we noticed last week, it appears from the cables to have been qualified by the Chairman, Lord Harris, in a somewhat pessimistic speech at the annual meeting. The report made by Messrs. F. D. P. Chaplin and D. Christopherson, the joint managers here, and by the Superintending Engineer, can hardly have prompted his lordship's pessimism. The native outlook, they report, is improving, owing not a little to the success of the new recruiting organisation. The mortality rate among natives is steadily being reduced. Other, not unimportant, economies are being effected. Power costs are coming down, and railway rates are being reduced, both being in turn reflected in the average working costs of the group. Native efficiency is being constantly increased, and the recovery of gold improved. Experiments continue to be made towards devising a suitable machine which can satisfactorily and economically take the place of hand drilling. "The efforts of the past year," says the report, "have been most encouraging, and there are good reasons for believing that we are to-day much nearer success in this respect than at any time in the past." Improvement in metallurgical practice has also to be recorded, the value of the gold lost in residues having decreased. This is due partly to the better recovery of gold obtained from the ore (a factor which, of course, has its economic limit), and it is satisfactory to note that the recovery in respect of the group for the twelve months ended July 31, 1912, was equal to 94·569 per cent., as against 94·167 per cent. for the previous period. In consequence of this increased recovery some 1,020 fine ozs. more of gold (equal, at 84s. per fine oz., to £16,884) were secured during the year under review than would have been the case had the previous year's recovery percentage obtained. The working costs of the companies of the Gold Fields group continue to compare favourably with the average costs of the companies operating on the Rand. For the six months ended June 30, 1912, the average costs of the Gold Fields companies were, according to the returns of the Transvaal Chamber of Mines, less than the average costs of all the gold mines of the Witwatersrand by 4s. 6d. per ton, or 23·8 per cent. lower. It should be mentioned that the above figures, in so far as they relate to the Gold Fields mines, do not include expenditure on machinery renewals and replacements, which amounted to an average of about 3d. per ton crushed. From August 1, 1912, certain reductions in railway rates on coal took effect, as well as a decrease in charges made by the Railway Administration for services performed at private sidings. It is estimated that this will benefit the Gold Fields mines to the extent of over £16,000 per annum on their coal supplies. Reductions in the railway rates on certain other goods came into force at the beginning of the present month. During the year the supply of power from the Victoria Falls and Transvaal Power Company has been satisfactory. Under the existing agreements between the Gold Fields companies and the Power Company, certain reductions in the price of power came into effect on October 1, 1912, which it is estimated will result in a saving of about £9,000 per annum. All these things go to justify the opinion—already expressed in these columns—that the mines of this group are among the best managed on the Rand, and that the directors show a sound grip of the position by striving for economies in every department and increased efficiency of the labour and processes employed. Further comment must be postponed until we receive the report of the chairman's speech.

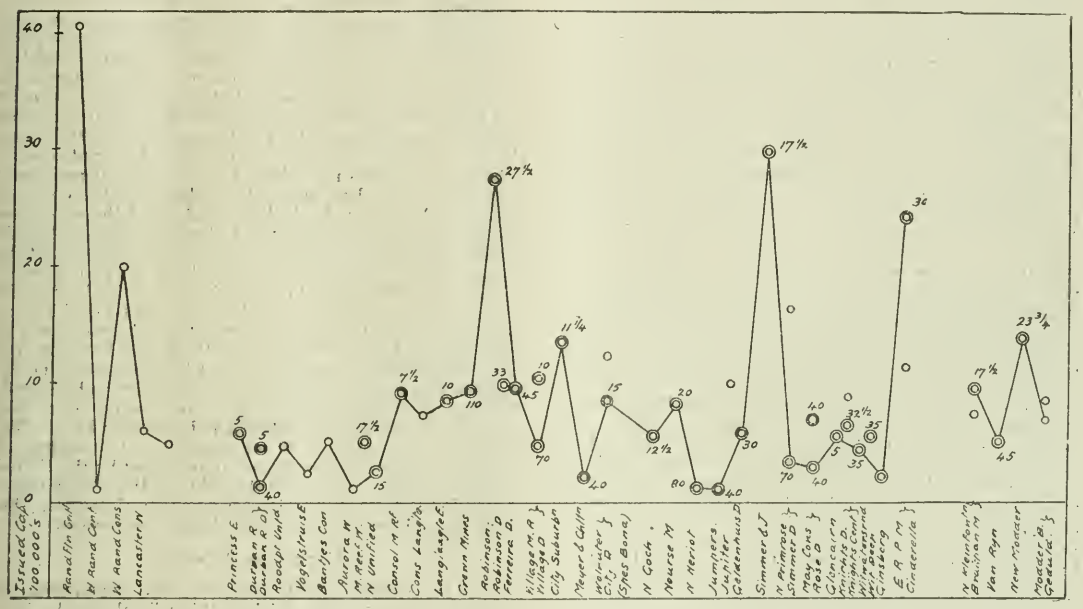
RAND PIONEERS AND THE INDUSTRY

THE annual dinner of the Rand Pioneers, held last Saturday night, was as usual the occasion for some important pronouncements on economic questions. It is to be hoped that the request made by the President, Mr. M. K. McLea, for interesting data and documents dealing with the beginnings of the Rand will bear fruit, and that the Rand Pioneers may thus add to their numerous other activities by becoming the custodians of the records and archives of the Rand. Sir George Albu, who is never happier than when throwing the light of reason and commonsense on some phase of the fallacious claptrap of the hour, dealt convincingly with the recently resurrected white labour propaganda. He showed that the meagre return now made by the Rand upon the millions invested here would be reduced to a negligible quantity if the labour extremists had their way. He was followed by Mr. A. F. Robinson, the President of the Chamber of Commerce, who exposed the administrative methods that continue to run the railways as a mere taxing machine for the squeezing of the Rand. Sir George Albu agreed with what Col. Leuchars had said on the question of white labour. He said there were so many misconceptions as to the policy of the mining industry and as to what it could do for white labour, that he would give a few figures to show that they were doing as much as they could in the employment of white labour. The present valuation of the mining industry was £110,000,000. Last year the profit of the industry amounted to 7·3 per cent. in dividends and interest on debentures paid out. Sir George reminded them that every year they were exhausting something like 1,000 claims at least, and were working a wasting asset. These claims represented a value of at least £2,000,000. Deduct this, he said, from the profits, and they would find that the actual profits paid out amounted only to something like 5 per cent. If they were to contemplate the employment of white instead of coloured labour, the profits would dwindle away considerably; in fact, there would be none left. What the country wanted for its development was capital. If they were to follow the advice of some of their politicians who did not know the conditions and circumstances, the country would speedily be ruined. Sir George's remarks were, of course, fully justified by the recent recrudescence of the white labour fallacy. It is to be hoped they will be taken to heart by the would-be subverters of the industry and by those members of the Ministry, like Mr. Sauer, who even to-day apparently fail to understand the position.

RAND DIVIDEND PAYERS.

Issued Capital and Dividends in 1911—Deep Level Ventures Near Germiston—Some High Dividends from the Largest Mines.

The season in which the final dividends of the year are announced having again arrived, the following diagram, which shows the results of 1911, will be interesting. In it the issued capital of the various producing companies along the line of the Main Reef series is shown by an irregular line; the circles upon which denote the relative position of the companies upon the capital scale. The circles which are unconnected with the line represent those properties which are entirely deep level propositions. Dividend payers are indicated by a double circle, and the total rate per cent. declared during 1911 by each company is shown by the numerals adjacent to the circles. Only fifty-two companies out of fifty-three which are now producing are shown upon the list; the Spes Bona, being a private undertaking, which publishes no announcement regarding dividends, is omitted. Other companies omitted which appeared in the last December returns are the Ferreira and Simmer East, both since amalgamated with other ventures. The former paid a dividend of 200 per cent. on a capital of £95,000. The Salisbury and Champ d'Or paid 8½ per cent. and 5 per cent. respectively in 1911. The former is now closed down, and the latter, practically exhausted, is under offer to tributors, and has ceased milling for some months past.



Issued Capital and Rate of Dividends of Dividend-Paying Companies, 1911.

The Crown Mines First.

Of the fifty-two companies enumerated, thirty-four paid dividends for the year 1911. The highest distribution was that of the Crown Mines, with a rate of 110 per cent. on an issued capital of £910,106; the lowest, 5 per cent., was paid by the Glencairn on a capital of £550,000. The West Rand companies—those, namely, from the Randfontein Central to Luipaardsvlei—with a combined issued capital of more than seven millions sterling, made no declaration whatever. From the Princess Estate to the Langlaagte Estate, both included, dividends were upon a moderate scale; while four of the companies on that list paid nothing. Beginning with the Crown Mines, the declarations are on the average fairly high as far as the East Rand Proprietary Mines and New Modderfontein. With the exception of the City Deep, Jupiter, Simmer Deep, Knight Central and the Cinderella Consolidated, every company along this line paid out to shareholders, some at a fairly high rate. In the further east three concerns declared dividends, the highest being that of the Van Ryn at 45 per cent. Of those which do not appear as dividend payers in 1911, the Bantjes Consolidated, Jupiter and Brakpan Mines appear in the first half-yearly list for 1912.

Some Prominent Capital Figures.

An interesting fact which appears at a glance at our diagram is that the larger number of producing mines along the Witwatersrand are possessed of an issued capital about or below the £800,000 level. A few, among them the Randfontein Central, West Rand Consolidated, Robinson, City and Suburban, Simmer and Jack, Simmer Deep, East Rand Proprietary Mines, Cinderella and New Modderfontein, stand out prominently above this line. Five of them paid dividends last year, which, with the exception of that of the City and Suburban, may be regarded as fairly high. The success of some of the deep level ventures in the neighbourhood of Germiston, as compared with those at other points, will also be remarked, the Rose Deep, Knights Deep and Wit. Deep ranging on the dividend list at rates varying from 32½ to 40 per cent. Only one other deep level approaches these figures, the Robinson Deep, namely, which appears on the list with a dividend of 33 per cent.

MINE TAXATION IN THE TRANSVAAL.—IV.

An Unscientific Scheme of Assessment—Partnership or Bald Taxation—An Interesting Suggestion.

Enough has been said about the method of estimating the profits tax to make it plain that the whole system if it can be called so, is altogether unscientific. The root of the difficulty which surrounds the working of the Act appears to lie in the fact that the relationship between the State and the mines in regard to this contribution out of profits has never been correctly defined. This circumstance was clearly revealed in the correspondence which passed between the Colonial Treasurer and the Chamber of Mines in connection with the revenue derived from the water which was pumped from the Knights Deep shaft as mentioned in a previous article. "In calculating the true production cost of any commodity, it is common," observed Mr. W. L. Hichens, the Colonial Treasurer, "and I think you will agree the sound practice, to credit the value or price derived from bye-products or incidental products which result in the process of production as a set-off against gross costs of production, and certainly in any partnership account for division of the produce, the bye-products would have to be reckoned against production cost. As between the company and the Government it is really a question of partnership account and division of produce, there seems no reason why the sound practice just referred to should be departed from." To this the Acting Secretary of the Chamber of Mines replied:—"With reference to your letter of April 6th, I am directed to state that this Chamber cannot agree with you that the profits tax is a question of partnership account and division of produce as between the company concerned and the Government. The question appears to be purely one of taxation, and no suggestion of partnership appears to have been made before, either in the proclamation or elsewhere." It is maintained, that is to say, that the right of the Government to a share in the profits of the gold mining industry is upon altogether a different footing to its right to a share in the profits of the diamond mining industry of the Transvaal, for instance. In so far as concerns mining property which was acquired before the proclamation it must be agreed that the Government's 10 per cent. share is distinctly a tax inasmuch as the ground was taken up without any understanding regarding 10 per cent. of the profits. It might be held by the Government, however, that the 10 per cent. levied on ground taken up after the proclamation was in the nature of a partnership claim, inasmuch as the right of mining for and disposing of all precious metals is unquestionably vested in the Crown and can be parted with upon any terms the Government may see fit to arrange. Whether the view of the Government in this latter case would be upheld by a Court of law in view of the terms of the proclamation and their bearing upon the undertakings to which they first of all referred, namely, the producing mines, is doubtful.

Conflicting Interests.

Since the profits tax is not a question of partnership account, then, it is evident that whereas the benefits which accrue to shareholders do not necessarily represent the actual conditions of a company's business in the matter of net earnings the tax can bear no definite relationship to those benefits. It is, on the other hand, confronted by all the obstacles prepared by the various methods of accounting which may be adopted by the different companies concerned, and in case of dispute can only rely upon the extremely inadequate definitions which have been quoted in our previous articles. Not only is it subject to the uncertainty which arises from the conflicting opinions of accountants and economists as to what is legitimate profit and what is not, but to that which follows upon the equally diverse views of engineers as to what is permanent work and what is not. Hence the appeals to the Supreme Court with regard to the revenue from water in the case of the Knights Deep and regard to the nature of the sumps of the Nourse Mines. It is not easy, of course, to devise what may be called a contributory scheme from the mines which would work smoothly under all circumstances. It does not seem impossible, nevertheless, to frame some method of assessing this contribution which would be much more scientific and less indeterminate than that now in vogue. Before this can be effected, however, it will be necessary to have a clear understanding of the position to be taken up by the Government, whether as a partner in the gold mining industry or as an organisation which has the right to establish a tax upon the fruits of that industry.

A Proper Basis of Agreement.

With this understanding as a basis it should not be difficult to draw up a scheme of book-keeping for the purposes of assessing the Government share which would cover fairly well all the usual operations of a mining company, and at the same time some limit to the scope of these operations. To share as a partner in an undertaking is a much simpler and fairer way of obtaining profit from the right to mine and dispose of precious metals, which is an asset of the State, than to tax every item, that can possibly be taxed, upon a balance sheet, quite regardless of the economical position of a company. To draw up such a scheme as the one suggested would be a work which would demand the experience and skill of accountants of the highest standing, and could not be adequately accomplished by officials whose view of the matter would necessarily be one-sided. It is not impossible that a commission formed of capable men of this kind might even suggest some newer and better method by which the Government could derive a revenue from the prosperity of the mining industry. That the methods of a State are not exhausted in the process represented by the existing profits tax, and that such a process is not necessarily the best available may be inferred from the following remarks, *inter alia*, of Mr. J. R. Finlay in the *Mining and Scientific Press*. Mr. Finlay has a reputation as an engineer and a student of mining economics, and as the agent appointed by the United States Government to assess the value of the copper mines of the Lake Superior district for purposes of taxation, his views upon the subject generally should carry weight:—

A Method of Taxation.

"If the Government is going to allow depreciation of capital stock," says Mr. Finlay, "it will always be in a hopeless muddle. It should forget all about capital stock and make the companies pay on a plain statement of expenditures which should be interpreted by a plain and simple rule. Such a rule should exclude from the list of expenditures all sums spent for the acquisition or defence of mining rights. Let us suppose a mine takes ten years before it begins to pay. During that time the cost for prospecting, development, and plant is $1,000,000. It then begins to earn $200,000 a year. At the end of the first year of such earnings the mine has no profits, but instead a debit balance of $800,000. It will not make any profits until at the end of its fifteenth year $1,000,000 has been earned back. Its depreciation is then complete. From that moment it should pay its corporation tax on whatever surplus of income it may have over properly chargeable expenditures. If the plant is worn out or inefficient and it becomes necessary to renew it, all such renewals should be allowed as a direct cost. For instance, if during the sixteenth year of the company's operations it should decide to build a new mill and spend $300,000 in so doing, while at the same time it earned $200,000 with its old mill, the net result for the year would be a loss of $100,000. The $300,000 spent would be properly chargeable to 'depreciation.' If during the seventeenth year the operation of the new mill should enable the concern to earn $100,000, it could pay off the balance of $100,000 due to depreciation, and for the first time in its

history have a balance of real profits, namely, $300,000. Thereafter, so long as the income exceeds the annual expenditures, and by exactly that amount, it should pay the corporation tax and it would be paying on real profits. The depreciation of the mine itself can never be undertaken intelligently. No one ever knows until it is worked out what it was really worth. The working out of it along the line briefly outlined above is what finally establishes its value. That value is in itself only the sum total of its profits. I have avoided all reference to the interest to be allowed on investments and the calculation of present values in order not to complicate the very simple line of reasoning."

THE NEW CEMENT UNDERTAKING.

An Associated Portland Cement Manufacturers' Promotion—Backed by Strong Financial Support—A Factory for Ventersburg Road.

We learn that the factory which is to be erected for the production of cement in the Union is to be established at Ventersburg Road. The enterprise was begun under the auspices of Mr. W. H. Harper, of Messrs. Harper Bros., who are well known as consulting engineers to the Victoria Falls and Transvaal Power Company. Some months ago an expert chemist was engaged for some time in making exhaustive tests of materials which were sent to Johannesburg from all parts of South Africa. Eventually some lime and and shale beds near Ventersburg Road afforded materials which seemed to meet all requirements; indeed, it was stated at the time that they were of an exceptionally good kind for the purposes of cement making. A site for a proposed factory was obtained near the Natal Spruit, and steps were immediately taken to float the enterprise into a company. This was effected through the agency of the Associated Portland Cement Manufacturers, Ltd., a corporation with an enormous capital and immense financial resources. The new undertaking will be affiliated to this company, and will, therefore, start under the best monetary and technical conditions.

A Powerful Group.

The Associated Portland Cement Manufacturers (1900), Ltd., control the cement trade in Great Britain, either directly or through the British Portland Cement Manufacturers, Ltd. As showing the position of these companies, the following note which appeared early last year on the occasion of the sale of Associated debentures in connection with the purchase of securities in the younger undertaking may be quoted:—"The Law Debenture Corporation, Limited, has offered for sale this week £1,440,000 5 per cent. Second Debenture stock of the Associated Portland Cement Manufacturers, 1900, Limited, at the price of 91 per cent. It is pointed out, as has already been announced in *The Statist*, that a company has recently been formed called the British Portland Cement Manufacturers, Limited, which will combine into one undertaking a number of businesses at present engaged in the manufacture of Portland cement in this country. It is estimated that the new company will own or otherwise control concerns having a capacity to produce upwards of 1,500,000 tons of Portland cement per annum, and the various purchases are now in course of completion. The Associated Company has been largely instrumental in the formation of the British Company, 'and an amount equal to more than the proceeds of the sale by the Company' of the present stock will be applied to the acquisition of securities in the new company, that is, Debenture Stock Preference shares and Ordinary shares. For the year to June 30 last, the net profits of the Associated Company amounted to £238,403, the interest and sinking fund for the service of the total Second Debenture stock of £2,115,000, including the present issue, required £126,900 per annum, so that it will be seen that the service is well secured without taking into account the revenue to be derived from the employment of the new capital, and it is naturally expected that by reason of the formation of the new company stability will be given to the cement trade as a whole. Moreover, the outlook is for a considerable expansion in the use of cement owing to the development in the reinforced concrete industry. At the issue price the stock gives a yield of about 5½ per cent."

A Question of Sites.

The site of the new cement factory was originally intended, as we have said, to be near the Natal Spruit, and thus near the principal market in the Union. The Government, who were approached in connection with the question of railway rates, gave it to be understood that the rates on manufactured goods would rule higher than those on raw materials, and the choice between Ventersburg Road, adjacent to the source of supply, and Natal Spruit, within easy distance of the market, was easily made. The freight from the former place to Johannesburg on raw materials as compared with the freight on the finished product, according to the rates quoted to the promoters of the new company, was sufficiently to the advantage of the raw material to justify the earlier decision. Afterwards, however, when negotiations in England were considerably advanced, it was announced that the freights on both classes of goods would be the same. The importance of a satisfactory lease and long tenure of life at Ventersburg Road, with the convenient railway facilities of the place, at once justified a decision to establish the factory there, under the altered conditions. A large order for plant was given in England some time ago, and it is understood that the practical part of the undertaking will be taken in hand without delay.

Blaauwbosch Diamonds.

The washing returns for November, 1912, were as follows:—10,257 loads treated, 3,146 carats recovered; or 30·67 carats per 100 loads.

Vaal River Gold Fields.

The company has again commenced work on the mynpacht. A contract has been entered into with Mr. Stockman to complete the erection of the 5 stamp mill on the steep hill overlooking the railway station, together with engine, building, etc., and it is expected that before this is completed the erection of the extraction plant will also be undertaken. The facilities for working on the new site will be so favourable that the saving should compensate to a considerable degree for lower grade of ore.

Lucky Diggers at Droogveld.

Some extraordinary rich finds have been made lately on the newly-opened digging areas at Droogveld. Droogveld is an area from eight to ten square miles in extent, is supplied with water pumped from the river six miles distant, and now boasts a commodious hotel. It forms part of the New Vaal River Diamond and Exploration Co.'s estate. Since July last L. B. Donovan, an ex-M.L.A. of the Cape, has sold diamonds found on his claims at Droogveld for over £13,000; Johnson and Lovegrove, a well-known partnership, have found £11,000 worth since June; a digger named Larson has sold for £5,000 during the same period; J. de Kock has found £2,150 worth since the middle of August; Young has sold for £7,500 from there, and £12,000 in all, including his finds at Niekerks—all since June. Kennedy and Snoman have sold for £2,900 since September.

THE GENERAL MINING GROUP.

Position at the Cinderella—Progress of Sinking and Driving—Phenomenal Values in the Lower Levels of the Meyer and Charlton—The Van Ryn's South Reef—Better Prospects at Roodepoort—How Other Subsidiaries are Faring.

The Cinderella Consolidated certainly is entitled to the distinction of being the unluckiest mine on the Witwatersrand, an unfortunate notoriety which a few years ago fell to the lot of another property of the General Mining Group, the New Goch. Apart from the disabilities under which the Cinderella recently has laboured on account of air blasts the company has been unfortunate in losing the valued services of between 1,200 and 1,500 efficient natives during the last three months. In consequence the working of the mine largely has been disorganised. The bright star in the firmament of the Cinderella Consolidated is the development. Very excellent values are being secured between the old Cinderella and the new "Central" shafts, and an important feature in connection with this portion of the property is that on account of extensive overlapping the tonnage of milling ore is greatly increased. The life of the mine thereby will be lengthened and this taken in conjunction with the fact that the values disclosed are very high inclines one to a much more optimistic view regarding the Cinderella than at present appears to be generally held. Some considerable time will elapse before the original Cinderella and "Central" sections are connected up. The new Central shaft which will be the main point of attack and hauling way of the property has now reached a depth of about 2,400 feet. It has been anticipated that the reef will be intersected at a vertical depth of about 3,000 feet but the reef conditions appear to be somewhat disturbed and any estimate as to depth at which the conglomerate will be cut must be regarded in the light of a mere approximation. The two shafts are situated about 5,000 feet apart and the drive which is to connect them up has now been driven for about half the required distance and has to date been carried about 1,200 or 1,300 feet into the ground purchased from the East Rand Proprietary Mines. The management hopes within the next few months to increase the milling capacity up to 23,000 tons per month, which is the maximum capacity of the present cyanide plant. A large amount of development has been carried out during the year now drawing to a close and the forthcoming annual report will in all probability record a substantial augmentation of ore in reserve. The working profit for the September quarter was £2,770, and for the month of October £2,189.

Meyer and Charlton.

Perhaps no other mine on the Rand can record more marked improvements as greater depths are attained than the Meyer and Charlton—one of the oldest and most famous mines of the Main Reef series. The values secured on the 18th and 19th levels are in several places phenomenal, and although we are not in a position at the moment of writing to give exact figures from a casual inspection of the assay plan we should say that the values exhibited in the lower levels establish this section as being one of the most consistently rich portions of the Main Reef series that have ever been located on the Witwatersrand. The high values now being disclosed are for the greater part obtained in the ground formerly owned by the Lark Syndicate and purchased by the Meyer and Charlton Company some time ago. This ground adjoins the western section of the City Deep on the north and the good values secured in that mine in conjunction with the high grade results now being obtained on the lowest levels of the Meyer and Charlton point to the existence of a block of deep level ground in this section of the Witwatersrand which compares most favourably with the best areas of the Central Rand at outcrop. The excellence of recent developments is reflected in the returns of the Meyer and Charlton for the past few months. In the quarter ending with September last the company crushed 42,517 tons for a total yield of £93,241 and earned a profit of £53,952, or 25s. 4d. per ton. The average milling value of the ore reserves increased to 11 dwts. per ton. In the month of October the company secured a working profit of £18,039. The total yield from 14,416 tons milled was £30,660—42s. 6d. or 10·01 dwts. per ton—thereby making the Meyer and Charlton the highest grade mine on the Witwatersrand.

Van Ryn.

The Van Ryn continues to record large outputs and earn excellent profits. Development, too, is proceeding satisfactorily. Particularly gratifying are the disclosures on the South Reef in the No. 3 mine. The Van Ryn's October profit with 140 of the 160 stamps erected at work was £24,186, or 12s. 4d. per ton, a rate which compares favourably with the earning for the September quarter, when £71,426, or just under 12s. per ton, was secured.

Roodepoort United.

The earnings of the Roodepoort United Main Reef for this year have proved disappointing. There are, however, encouraging features to be noted in connection with the property. The area lying between the Kimberley and Kimberley East shafts gives distinct promise of redeeming to some extent the position of this mine. Drives east beyond the dyke on South Reef indicate a large stretch of settled country in this portion of the property. It will, however, be some time before the mine is in a position to reap the reward, in the shape of profits, of the improved development results now being secured in this portion of the mine.

Aurora West, New Goch, and West Rand.

Of the other productive subsidiaries of the General Mining and Finance Corporation—the Aurora West, New Goch, and West Rand Consolidated—there is little to report. At the Aurora the rate of profit earning disclosed in October was in excess of that announced in respect of the September quarter operations, which in turn were £3,518 in advance of the profits earned in the preceding quarter. The lower levels of the Goch are looking well, and at the West Rand the enlargement of the milling equipment is receiving thorough consideration.

Montrose Diamonds.

The annual general meeting of this company was held at No. 4, London Wall Buildings, E.C., on November 11. Mr. M. F. Kindersley presided. The Chairman, in moving the adoption of the report and accounts, dealt at some length with the difficulty encountered in extracting the diamonds from the ground owing to its clayey nature. Of all the mine ground washed, he said the great bulk of it had been intermixed with foreign matter, and when treated the material only yielded about 20 per cent. of its contents. The programme of work now being adopted was to develop Nos. 1 and 3 mines to their walls at a depth of about 100 ft., so that the ground would be free from any intermixture. That work was expected to develop about 1,000,000 loads of blue ground ready for immediate treatment, and as the present plant would be improved in such a manner as would enable it to effectively treat the whole of the ground put through, they could then obtain reliable information as to the actual value of both mines, it being self-evident from past history that the results obtained were adversely influenced both by the character of the ground treated and by the method employed. The directors were looking forward to the future development of the mine with eager hope, based upon more sure ground than was usual in diamond prospecting.

THE SORTING PROBLEM.

Whole Question Revived by the Knights Deep's Action—Does it Pay to Mill Waste?—Mr. Pitchford's Views Recalled—Elimination at Surface on the Wane.

In our last issue we referred at some length to the abandonment of ore sorting at the Knights Deep mine. We then briefly indicated the importance of the issues involved and wrote of the fruitful theme for discussion opened up by the decision altogether to abolish sorting. Very little study of the statistics published by the Chamber of Mines is necessary to bring one to realise that under the new conditions of mining and milling—we refer specifically to the breaking down of much larger quantities of ore and the stamping and treatment of this ore on a far larger scale than hitherto—that particular branch of mining economics which concerns sorting has undergone an almost revolutionary change also.

Declining Percentages.

For years past the grade of ore treated by the mines of the Witwatersrand has been on the decline and so too has the percentage of waste rock rejected by the mines decreased. In 1907 over 16½ per cent. of the ore hoisted was thrown away at surface as valueless, and in that year the mines recovered just under 34 shillings for each ton milled. The figures regarding sorting percentages in following years and for the month of October of this year are as follows:—

	Percentage.	Dwts.
1908	15·5	7·39
1909	14·45	6·8
1910	13·64	6·7
1911	13·01	6·57
October	12·18	6·59

Naturally one is tempted to ask if the statistics given above do not afford an interesting commentary on the methods that of recent years have been pursued on the Main Reef series, and if indeed they do not afford damning evidence of the subordination of all other considerations to that of mere spectacular tonnage. It is common knowledge that of late years there has been little tendency towards decline in working costs, and since 1907 the recovery per ton has fallen from 34s. to 28s. The condemnation of the present policy of accelerated production with all the hustle and strenuous striving for sufficient ore to fill immense ore bins might perhaps be extended to the point of contending that the marked contraction in grade has in large measure been due, and directly due, to the decline in the percentage of waste eliminated.

Present Mining Methods.

The figures seem to revive the question: Does it pay to crush waste rock? We must confess that in the light of recent investigation into this aspect of Rand mining the problem appeals to us in a somewhat different way to that in which it did a few years ago. It is clear that the whole salvation of the Rand depends on ability to crush very large tonnages of ore, for it must be admitted that the margin of profit practicable from Randfontein to Geduld is a comparatively small one. We do not think that there is any real evidence to support the view that the banket beds are becoming impoverished as greater working depths are attained. But it cannot be denied that the amount of really high grade ore available would not be sufficient to last for more than a very limited period, and the industry, instead of being a long-lived one, would be a very ephemeral affair indeed. Even the abnormally rich Ferreira and Robinson mines would have had very short lives had they adhered to the high grade standard which their earliest operations resulted in. Close sorting at mines of this nature undoubtedly proved profitable. Under given circumstances sorting is a factor of great importance as affecting profits to shareholders. On this head it is interesting to study the tables issued with the earlier annual reports of the Ferreira Company. Thus in 1898 10 per cent. was sorted and the ore was graded up to 22 dwts. In 1899 one-third of the rock hoisted was eliminated and a grade of 21 dwts. was obtained. In 1902 20 per cent. was rejected and the ore was graded up to 15 dwts. These figures are very interesting as bearing on the operations of a high grade mine possessed of comparatively thin reefs and a relatively small crushing plant. But the manager of the average low grade mine on the Witwatersrand at the present day has to approach the problem of waste rejection in a very different way to that adopted by Mr. Harry Johns at the Ferreira a decade and a half ago.

Mr. Pitchford's Views.

One of the strongest cases made out for sorting was contained in an address delivered a few years ago before the mining students of the University of California by Mr. J. B. Pitchford on Rand Mining. On the question of sorting the lecturer remarked:—"Suppose a mine contains 7,200,000 tons of ore that will mill and cyanide to yield 10 dols. per ton. The capacity of the mill is 1,000 tons per day; the hoisting capacity is greater. The cost of mining and surface expenses is 6 dols. per ton; that of treatment 1 dol. The net profit remaining will be 3 dols. The 7,200,000 tons at 3 dols. yields 21,600,000 dols. profit for 20 years' work. The rate of profit per year will be about 1,080,000. Now, 1 dol. per year invested at 5 per cent. compound interest for 20 years would be 33·066 dols. Hence 35,711,280 dols. equals total profit of operations at the end of 20 years without sorting. If now 15 per cent. of that ore that goes 1 dol. per ton is sorted out there will remain 6,120,000 tons to be milled yielding 11·588 dols. per ton. The total cost and profit will be:—

	Dollars.
Hoisting and mining 7,200,000 tons at 6·00 dols.	43,200,000
Sorting 7,200,000 tons at 5 cents.	360,000
Milling 6,120,000 at 1 dol.	6,120,000
Total costs	49,680,000
Product, 6,120,000 tons at 11·588 dols.	70,920,000
Net profit	21,240,000

Or the net profit equals 1,249,411 dols. per year for 17 years. Now 1 dol. per year at 5 per cent. compound interest for 17 years equals 25·84 dols. Hence the profit of the 1,249,411 dols. for 17 years will be 32,284,780 dols. At end of three years 32,284,780 dols. would amount to 37,372,861, the total profit at the end of 20 years for the sorting system. The difference would be 1,661,681 dols., which represents the increased profit at the end of 20 years for the sorting over the non-sorting system. But as the mine would have been worked out in 17 years the mine plant could have been sold three years earlier or used for three years on other property. These figures are based on sorting after the ore is brought to the surface. Ore sorted underground would save the cost of hoisting."

Mr. Pitchford's statement of the case would hardly hold good to-day. His hypothesis places the costs of mining, hoisting and milling much too high, whilst the cost of sorting out waste appears abnormally low. Moreover, the whole fabric of his statistical reasoning becomes well-nigh valueless in so far as present day conditions on the Witwatersrand are concerned, because he assumes a grade nearly 50 per cent. in excess of that at present being obtained. As regards Mr. Pitchford's last statement—i.e., in reference to ore sorted underground—it may be pointed out that on account of much extended stoping operations the necessity for building up supporting waste rock packs has been convincingly brought home to many managers during recent years. At numbers of mines very large tonnages of waste

have been rejected and used as supports for the hanging. This practice appears to be on the increase and has no doubt in some measure influenced percentages of waste rejected at surface.

As we stated in our last number, the amount of waste likely to be rejected at the Knights Deep (say 3,000 tons per month) can be crushed for 7d. per ton, or less than £90, whereas the same quantity would cost £300 to eliminate on the picking belts.

Mines with Low Rejection Figures.

The Knights Deep can hardly be cited as a representative example of Witwatersrand mines, as it is an ultra low grade proposition and possesses the fourth largest milling equipment on the Rand. There were, however, eleven mines operating on the Witwatersrand during October which recorded a grade of 5 dwts. and under, and at mines of this nature there obviously must be no great amount of scope for grading up the ore delivered to the mill. Some of these mines, moreover, possess large equipments and record low milling expenditures. A close investigation of the conditions in regard to reef widths, assay value of waste, expenses in various departments, etc., prevailing at each property would be necessary to enable one to arrive at a definite conclusion as to whether it would pay these concerns to abolish sorting altogether. Apart from the Knights Deep, only one mine on the Rand did not reject any waste rock at all during October. This was the Consolidated Langlaagte where a grade of 5·72 dwts. per ton was secured. Of the other mines that practised sorting, the following rejected less than 10 per cent.:—

	Rejected. Per Cent. of Tons Hoisted.	Yield per Ton Dwts.
Bantjes Consolidated	9·87	6·82
East Rand Proprietary	9·89	7·65
Jumpers-cum-Treasury	3·76	9·9
Jupiter	7·75	5·11
Knight Central	7·94	5·59
Langlaagte Estate	5·57	4·95
Meyer and Charlton	4·99	10·01
New Modderfontein	5·00	9·17
New Primrose	8·67	6·36
Randfontein Central	7·55	5·78
Robinson Deep	9·62	7·05
Simmer and Jack	4·5	5·17
Simmer Deep	7·48	3·75
Witwatersrand Deep	9·00	6·54

We hesitate at this juncture to express any very definite objections as to the sorting policy pursued by many mines. Nor do we presume to define the conditions under which rejection of waste rock becomes unprofitable. The decision of the Knights Deep Company seems, however, to suggest that sorting on the Rand has even more circumscribed limitations than were discussed by the late Mr. Wager Bradford in the memorable paper that he read before a local technical society on this intricate subject a few years ago.

SOUTH AFRICAN TIN AND COPPER OUTPUTS.

The Effect of Drought on Production—Messina and Namaqualand Copper—No Tin from the Cape.

Considerable interest always attaches to the returns issued by the Mines Department as to the production of copper, tin, and other base metals. Gold output statistics are published by the Chamber of Mines early in the month, and are always more or less discounted, whilst the figures as to coal output under the control of the Coalowners' Association never evidence any very sensational movements. Tin and copper—more especially the former—are, however, infant industries, and the progress of production is always noted with much interest. For the past six months all the cassiterite produced in the Union of South Africa has been won from the Waterberg Fields of the Transvaal, and it is noteworthy that the output has declined since June, when a production of £42,643 was announced. In July the output fell to £29,484, but rose in August to £39,588. There was a decline to £34,066 in September, and in October the production fell away to 206·5 tons, valued at £28,940. The contraction in output is in large measure—one might write, in fact, almost entirely—due to the severity of the drought and the shortage of water for milling purposes at the Zaaiplaats mine. The figures given above refer to sales and shipments only, and it is worthy of note that the ore despatched during October contained 68·32 per cent. of pure metal. The actual output of marketable product was 218 tons of 68·53 per cent. pure metal. In regard to copper, the output of marketable product was:

	Tons.	Per cent. of Pure Metal.
Transvaal	248·75	48·6
Cape	989	51·11
	1,237·75	

Sales and shipments were:

	Tons	Per Cent. of Pure Metal.	Value.
Transvaal ...	182·5	18	£6,130
Cape	2,952	32·01	66,126
	3,134·5		£72,256

The copper output (sales and shipments) in the Transvaal and the Cape since Union has been as follows:—

	Transvaal.		Cape.		Union of South Africa	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		£		£		£
1910—						
June to Dec.	1,619·917	38,375	8,007·750	189,661	9,627,667	228,036
Year 1911 ..	2,078·776	48,237	21,919·000	503,908	23,097·776	552,145
1912—						
May	165·833	5,844	—	—	165·833	5,844
June	94·250	3,175	—	—	94·250	3,175
July	116·333	3,861	4,319·000	142,215	4,435·333	146,076
August ...	113·833	3,903	—	—	118·833	3,903
September ...	263·600	8,581	3,717·000	134,895	3,980·600	143,476
October ...	182·500	6,130	2,952·000	66,126	3,134·500	72,256

The Transvaal's output has been derived almost entirely from the Messina copper mine, whilst the production of the Cape has been obtained from Namaqualand.

Other Minerals.

The output of minerals other than gold, coal, diamonds, copper and tin produced in the Union is very small. Three items only ran into four figures in the October list, and the largest of these was silver in gold bullion, which had a value of £9,695. Next on the list is lime, of which 5,338 tons, valued at £8,511, were produced. Of this amount, 4,894 tons came from Transvaal lime works and the remainder from Natal and the Orange River Colony. Next on the list is an output of 112 tons of asbestos, valued at £1,925, by the Cape. This, in fact, was the Cape's only output under the heading of miscellaneous production. All other outputs in the "other minerals" schedule fall to the credit of the Transvaal. Verily, to him that hath shall be given! The productions, however, were quite small, and comprised unimportant outputs of graphite and magnesite, flint and corundum. Yet these very minor branches of industry may in the course of time develop into important and valuable "side lines." At any rate, it cannot be denied that in regard to at least two of the minerals which come under the other minerals schedule of the Mines Department, there are distinct possibilities in the Transvaal Province. We refer more especially, of course, to lead and zinc.

MINING REQUIREMENTS AND LOCAL INDUSTRIES.

The Case for the Starting of More Subsidiary Industries.

(By a Correspondent.)

The establishment of local engineering works or the extension of existing ones should not be delayed by waiting for the exploitation of the wealth of iron ore existing in this country; on the contrary, it must open the path for a future great iron industry. In the meantime we should have to rely on imported raw materials, but even so the industry would be a legitimate one. Switzerland affords a striking example of the fact that the existence of raw materials is not an absolutely necessary condition to the vitality of sound industrial life. Neither coal nor iron exist in that country. However, it has several great engineering works and machine factories of world-wide reputation. Whilst raw materials are free of duty and pay the lowest railway rates, a single punched hole in a steel girder causes such iron to be classified as worked goods, paying high duties and railway rates. South Africa is in an eminently better position. It is a large producer of coal, possesses large iron deposits and other mineral resources waiting to be explored, and as a new developing country, it offers an unlimited market for industrial products. According to the report of the Government Mining Engineer, over £14,000,000 sterling have been expended by the mining industry of the Union during 1911 for machinery and stores, and £2,240,728 worth of machinery, plant and spares has been imported. From all this enormous turnover the country actually receives very little benefit, as practically all the money goes Oversea. Even under the present conditions a great portion of the equipment of new mines could be made locally at reasonably competitive prices, but the accumulated duties of directors and consulting engineers do not allow them to worry much about details. It is easier and more congenial work for them to cry for cheap railway rates and custom duties for wholesale imports of supplies and complete mine equipments than to go to the trouble of splitting the block orders, placed in lump sums Oversea, into one portion which could be locally made, and into another which unavoidably has to be imported. There is not the least doubt that if the example given by Switzerland were followed, practically all steel structural work, and a great part of machinery and appliances could be supplied locally by well-equipped, prosperous engineering works and machine factories at a cheaper cost price than the mines actually pay. A commission of inquiry should carefully investigate this question, and all such work and supplies which legitimately can be claimed to belong to South African enterprise, should be protected by a drastic custom and railway policy. For centrifugal pumps—to mention only one item—there is a permanent large demand, in consequent of their great wear, and as they are an article exceptionally adapted for local manufacture, their import should be made prohibitive. (The imports under the total item " pumps " amounted, in 1911, for the Transvaal gold mines, to £62,723.)

Lamentation will be raised by the mining industry that such a custom and railway policy would place a fresh burden on an already overtaxed industry. The contrary is nearer the truth, as local industries, once given a chance of a fair start, could within a comparatively short time efficaciously compete with the imported products, or even stop importation altogether, as has been the case with dynamite, which, by competition of local manufacturers, is, in South Africa, cheaper than in any other part of the world. A slight effect on the capital expenditure for mining requirements will only temporarily be felt during the transition stage. The trade would soon adjust itself to the new conditions. Large stocks of rolled steel girders and other raw materials would be kept in the country, enabling local engineering works to execute orders in shorter time than it now takes to import the finished products. In many instances the cheaper price claimed for imported products is made illusory by the losses sustained by errors due to misunderstandings of the drawings, delays in transport, breakages, etc., reasons which are frequently given in Chairmen's speeches to explain excesses of estimates or for delays in construction work.

Private enterprise and capital are ready to go in for local industries, but as things now stand there is no inducement for them to do so, as the capital cannot take the risk of depending exclusively on the goodwill of the mines. Amongst the obvious direct and indirect advantages accruing to the country from local industries, the adding of a fresh element to the engineering profession living at present in entrenched camps of the mining houses, may be especially mentioned.

In self defence against the rapid increase of the black race, the inhabitants of this country must turn their attention to the time when the last golden egg will have been taken from the goose, and capital and labour will have to find other outlets for their activity. Already now we must strive to make the country self-supporting, and no time should be lost if local industries shall not forfeit the advantage of a good start whilst the mines, with their enormous requirements, are on the market.

Kolmanskop Diamonds.

The output of diamonds from this company's property at Luderitzbucht for the month of November was 9,328 carats.

Rand Klip.

The under-mentioned developments for the month of November have been cabled to the London office of the Rand Klip Company:—

	Footage Sampled	Value. Dwts.	Width. Inches.
First Level West	10	3½	44½
First Level East	65	4½	11¾
No. 1 Winze First Level West	105	2	20¾
No. 1 Winze First Level East	95	4	13¼
Main Winze	60	12	15
Second Level West	40	2	16¼
Second Level East	130	5¼	8¾

New Rand, Limited.

Mr. A. R. Sawyer, the well-known mining expert, has been interviewed in London. He declares that the prospects of the New Rand, Limited, finding the Main Reef series are better now than at any time since the formation of the company.

Brakpan Mines.

The secretary supplies us with the following information with respect to the November output:—Stamps working, 150; running time, 28 days; ore crushed, 59,020 tons; tube mills working, 7; ore hoisted, 68,463 tons; ore from dump, 1,365 tons; waste sorted, 14·76 per cent.; fine gold declared, 21,373 ozs.; value declared, £90,038, equal to 30s. 6d. per ton milled; working costs, £48,979, equal to 16s. 7d. per ton milled; working profit, £41,059, equal to 13s. 11d. per tons milled.

MINES DEPARTMENT AND THE WHITE LABOUR QUESTION.

Afrikander Aversion to Trades and Manual Labour.

A Union Government Blue-book has just come to hand, embodying the annual reports of the Johannesburg, Capetown and Pretoria Labour Bureaux, with a covering report by the Secretary for Mines. The latter gives some general particulars and comments under various heads, which are full of interest.

Administration.

Dealing with the question of administration, the Commissioner states that the department had continued the arrangements made at Union whereby Labour Bureaux were established in all towns in the four Provinces, a change, however, being made in Pretoria by the Railway Administration establishing its own office under an Inspector of White Labour. The supineness of employers in making use of the bureaux, especially in the north, was still to be regretted, but when the fact is remembered that the system is entirely new in the three northern Provinces, the work accomplished might be regarded with satisfaction. The department aimed at supplying employers with the best labour possible, but this can only be attained with the wholehearted co-operation of the employers themselves, and it cannot be expected that a good class of labour would use the bureaux unless, through its agency, assured of steady and good employment. It was hoped that in course of time employers of all classes of labour would look on the bureaux as the most reliable source of labour.

The Labour Market.

Dealing with the labour market, the report goes on to say that there is still a great diversity in the conditions of both skilled and unskilled labour throughout the Union, the outstanding difference being the rate of wages paid at the coast and in the interior. The high wages paid to artisans, *i.e.*, in the Orange Free State and Transvaal, naturally act as an alluring bait to draw workmen to the large towns in these two Provinces, the result often being that the labour market becomes glutted and many highly skilled men find that they have either to take inferior work or leave the country.

Skilled Coloured Artisans.

Another factor which is beginning to be felt is the increasing number of skilled coloured artisans who are migrating from the coast. Before Union the coloured artisan was chiefly to be found in the coastal towns, but the stimulus which the building trade has received in the interior by the erection of large Government and private buildings has attracted a large number of these men. This may, says the Commissioner, lead to the establishment of a permanent artisan population in the interior, which has not in the past existed to any extent, the practice having been that when work ceased the artisan emigrated, in the majority of cases, to another country. A serious matter of regret to which the Commissioner calls attention is the fact that there appears to be an unwillingness on the part of parents to apprentice their children to any of the skilled trades, especially the building trade. This unwillingness on the part of young South Africans to learn the ordinary skilled trades is difficult to understand, as the greater part of the work is carried out under very healthy conditions, and the skilled workman can nearly always command a high wage.

Dependent on Imported Labour.

Under present conditions contractors are almost entirely dependent on imported labour, the supply of which naturally fluctuates according as work is plentiful or otherwise, and the establishment of a white artisan population is impossible. As indicated in the Mines Department report, the aversion of parents to apprenticing their sons to mining remains, and the Mines Training School at the Wolhuter has never been up to its full complement. This unfortunate state of affairs the Commissioner considers may have been partially, but cannot be wholly, due to the fear of phthisis, as before the conclusions of the report of the Medical Commission of 1911 were known, the same difficulty was experienced. Parents, however, he states, may rest assured that so far as the dust danger is concerned, the greatest precautions are being used and the Wolhuter is in many respects a model mine. The school has also furnished a curious example of the persistence of the South African prejudice against manual labour, it having been necessary to get rid of a certain number of apprentices who could not bring themselves to do such work as hand stoping, which they regarded as Kaffir labour. Naturally the influence of such views was extremely harmful to the objects of the foundation of the school, and their continuance could not be tolerated.

Industrial Disputes.

Going on to deal with industrial disputes, the report states that the provisions of the Transvaal Industrial Disputes Act have not yet been extended to the whole of the Union. Several disputes occurred during the year, and in cases where the provisions of the Act had been applied it was gratifying to be able to state there had been no cessation of work, with resultant monetary loss and often misery. Opinions were divided as to the efficacy of the Act, but one fact did seem apparent—that the facilities provided for the disputing parties to sit round a table and thresh out their differences before an impartial umpire tended to the removal of misunderstandings and prejudices which otherwise would have no chance of ventilation and resulted in the establishment of a feeling of better understanding and co-operation between employer and employee. The main questions which had formed the subject of most of the disputes were wages and hours of labour. The former, in the opinion of the Commissioner, was likely to remain a controversial question so long as there was such a large difference in the prices paid for labour in the various Provinces. The efficacy of a standard minimum wage would, he says, appear to be open to doubt in a country such as this, where the conditions of life varied so greatly in the different districts, and a better solution seemed to be the establishment of district wages boards as and when required.

Mine Benefit Societies.

The Commission appointed in March, 1910, to inquire into the present conditions of these presented its report during the year, stating their inability to agree on two important points: (1) Compulsory consolidation of the existing mine benefit societies on the Witwatersrand; and (2) compulsory contributions by employers. Majority and minority reports on these two points were, therefore, presented, the majority being in favour of the adoption of both these principles. On all the other questions the Commission were in agreement.

Factory Act.

Owing to the enormous amount of important legislation which has had to be considered since Union, it had been impossible to deal with this very important measure; but a draft had been prepared and would probably be published shortly.

MINING EXAMINATIONS.

Private individual tuition for Mine Managers', Mine Captains', Mine Surveyors', Mechanical Engineers' and Engine-drivers' Examinations. Practical Mathematics and Electrotechnics. Correspondence lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 35 and 36 Cuthbert's Buildings, corner of Eloff and Pritchard Streets, Box 2061, Johannesburg.

MINING PROGRESS IN MANICALAND.

Decreased Output—Official Review of Progress of the Various Mines.

We take from the official organ of the Manicaland Mines Department the following review of mining in the territory in the last quarter:—

The value of the gold output of the territory during the quarter shows a slight decrease as compared with that of the previous quarter. This is principally due to the expiration of the agreement by which Messrs. Evans and Peachy held the Guy Fawkes mine on tribute. This agreement terminated on July 8th. In fact, however, the mine ceased producing in the latter part of May, and the production of the Guy Fawkes both for that month and the preceding month of April was exceedingly small, being much below the usual average. As the tributors had arranged to terminate this agreement, they were unwilling to do the development work which would have been necessary to ensure a better output. A certain amount of development, especially on the 5th and 6th levels, and repairing work at different points of the mine will be necessary before this property can again be expected to enter the list of regular producers, but there is a considerable body of untouched ore lying unstoped between the 4th and 5th levels, some of which is said to carry good values, and the extent of the strike of the Guy Fawkes reef would appear from the evidence of the upper levels to be considerable. It therefore seems reasonable to believe that further driving will show the same extension of reef at the 5th and 6th levels. It is earnestly to be hoped, in the interests of the territory, that the Guy Fawkes may before long be again at work, as its output constitutes a most important factor in the total production of the district. On the Bragança mine, the other principal gold reef proposition of this field, development work is being actively continued. On the 120 feet level some 350 feet have been driven north on the reef from the neighbourhood of the new main shaft. Another shaft is being sunk about 1,500 feet north of the main shaft. It is intended on reaching the 120 feet level to cross to the reef, which is situated at a small distance from the new shaft, and then to drive southward, with the object of effecting a junction with the drive that is being advanced northward from the main shaft, so as to prove the whole extent of reef lying between the two shafts at the 120 feet level. Meanwhile the sinking of the main shaft will be continued—temporarily as a two instead of a three compartment shaft—to a depth of 240 feet, at which level it is proposed to drive so as to further test the mine at this depth. A trial crushing of what is calculated as being some 2,000 tons of ore taken from the 120 feet level has been commenced at the Bragança battery, and it is probable that similar trial crushings will be made at intervals of time so as to test the value of the ore developed. As, however, it is intended to establish some two years' reserves before commencing regular crushing, it is not likely that the Bragança will commence regularly milling on a permanent basis until about the end of 1913. On the Therése, Mr. Oertel, working on a small scale, shows an improved production for the quarter under review as compared to that of the previous quarter. On the South Firenza, the Chesterford G.M. Syndicate has continued crushing with a light prospecting battery. Monsieur de la Marlière, the engineer representing the Andrada Mines, Ltd., and in charge of the alluvial prospecting operations of that company, returned to the territory in June, accompanied by Mr. Cahill, the assistant engineer, and by other members of his staff. Work has already been commenced on the claims belonging to Mr. Dumat situated on the Revue River. Last season that portion of the Revue Valley lying east of these claims and between them and the junction of the Rivers Munene and Revue, was examined. This year it is proposed to prospect two further sections of ground, viz., Mr. Dumat's claims and the ground lying west of these claims, and between them and the junction of the River Azeredo with the River Revue. The three sections of grounds mentioned make up approximately what would appear to be the area suitable for dredging on the Revue within this district. We understand that so far the engineer in charge is satisfied with the results of the prospecting work that has been carried out, and we feel that we are already justified in looking hopefully forward to the establishment of an alluvial industry in our midst. Further preparatory work and the ordering and erection of the machinery required both for dredging the alluvial deposits and for the necessary supply of power must intervene before the period of production is reached, which, if things continue successfully, should be, we think, towards the end of 1913 or the commencement of the succeeding year. Meanwhile, however, the preliminary work to be carried out will undoubtedly spell an increase in the commercial prosperity of Macequece, and will, we trust, also be the cause at the same time of an increased activity in prospecting the mining resources of the district generally. During the quarter the Geological Survey resumed their field work in the territory, this being the second season of the survey's work. Steady progress is being made in the important work of the survey, which will furnish most valuable geological data for the future guidance and information of all prospectors coming into the country.

MESSINA (TRANSVAAL) DEVELOPMENT COMPANY, LTD.

Average Assay Value of Copper Ore, 10 per cent.—Promising Outlook.

The annual ordinary general meeting of the shareholders of this company was held at Salisbury House, London Wall, E.C., on Tuesday, November 12, 1912. Mr. Arthur M. Grenfell (chairman of the company) presided. The Chairman, in moving the adoption of the report, said the profit and loss account showed that the ore shipments realised £29,000. They carried forward to the balance sheet a debit of £10,000 as the charge for all their work during the year, a very satisfactory figure when they considered the development reported by Mr. Calderwood. In all, they had mined to June 30, 1912, a total of 76,135 tons of ore, from which they had produced 10,861 tons of copper concentrates, with an average assay value of 52.7 per cent. copper. The total distance actually proved along the strike of the lode was 3,800 feet. A strong feature of their development was the consistent average assay value of the ore, namely, 10 per cent. They had decided, in view of the very favourable outlook for a permanent mining industry, to establish themselves on a sound basis at the mine as regarded buildings, plant, and machinery. With the new plant they would be enabled to keep their sinking and developing operations going on simultaneously, and also keep pace with the milling requirements. Although they had laid down their new plant for the treatment of ores by concentration methods, they had not overlooked the important question of smelting. In fact, they had decided to instal at once a small smelting plant, which would be used for experimental purposes, and at the same time on a sufficiently practical scale to allow for an output of smelted matte. They had sufficiently proved that the ores presented no metallurgical difficulties for successful treatment. The figure as to the ore reserves given in the report, namely, 170,000 tons of 10 per cent. copper ore blocked out, must be considered conservative. He had no doubt the development would show they had much more. If they roughly estimated a profit of £2 per ton of ore with copper at £75—yesterday's price was £82—they had a total profit of a million sterling when the mine was developed to 1,000 feet and milling was carried out on the scale outlined. Mr. Calderwood estimated that, with the completion of the new mill, works, and given railway facilities, the profit resulting from milling 120,000 tons should be £240,000 per annum, based on copper at £75 per ton. This might appear to be a bold estimate, but they had been working for nearly ten years to bring the mine to this stage. The nearer they got to having a chance of demonstrating its true value, the more confident they were that their estimate would be proved to be conservative. All they required were railway facilities, and they hoped before next summer to have these. The estimates referred to related to the Messina mine alone, but it was beyond all question that other discoveries would be made in other parts of the property, having

large runs of ancient workings adjacent to the present mine. Generally speaking, it appeared safe to predict that in time they would have at least four large copper-producing mines on their properties, of which the present Messina was the first, that was reckoning the Berkenrode and Vogelzang alone. With a group of producing mines, and a railway line connecting each one, the prospects for establishing a large copper industry were certainly attractive, and with their own smelters established for treatment and refining their own copper, they should in time become an important factor among the large copper producers. This might seem an ambitious scheme, but was quite within the range of possibility.

Future Outlook.

The outlook for the copper industry at the moment was decidedly encouraging. There was no other metal, iron excepted, which was of such general importance as copper, and it therefore occupied a position in the commerce of metals of great magnitude. The wide demand and the increasing uses for the metal was reflected in the production figures. It was satisfactory to note that the price of the metal had shown an advance since the beginning of the year, though fluctuations, of course, occurred. January quotations were at £62, March £68, June £79, and August £79 for standard cash, and on Monday, in spite of the crisis the country was going through, the price was £76. Then copper sales were on the basis of best selected copper, which was £5 higher. Information obtained from the most reliable sources indicate that the price of copper was likely to be maintained at about present average prices for the next two years. They were, therefore, striving to be in a position to take all the advantage possible of prices, which would enable them to make substantial profits, and it was their intention to increase their production as far as possible. He was of opinion that the Messina held out the best possible prospects as a profitable producer, and there was every reason for congratulation on the state of the mine, for it was in a very excellent position. There were large sections not yet properly developed, and as soon as they could take these in hand, he had no doubt that development would show that they had a larger tonnage per level than had been allowed for in the estimates. A very satisfactory cable was just to hand with regard to the progress of the development. The output for October was stated to be 249 tons of concentrates, which assayed 48.6 per cent. copper.

Mr. J. M. Calderwood (Consulting Engineer) then addressed the meeting. He said the outlook was very promising indeed, both as regards the mine and development, and he could see no reason why the estimates outlined for production and profit should not be realised. The cablegram which had just come from the mine informed them that the west drive beyond the dyke was looking well and showing copper glance. On the seventh level, recently opened, a cross-cut had been put through the lode, assaying 5.3 per cent. copper for a width of 20 feet of ore exposed. On the eighth level they had started sinking a winze, and on the footwall section, which was now down 5 ft., the ore assayed 10 per cent. copper. They were still continuing shipments out of development ore, and also a small amount of stoping to keep the mine in readiness for operations. The output for the month of October was cabled as 249 tons of concentrates, which averages 48.6 per cent. copper, and they had done in footage 764 feet of development. Mr. R. J. Frecheville (Director) seconded the motion for the adoption of the report and accounts, and it was carried unanimously. After the retiring director and auditors had been reappointed, the meeting closed.

New Kleinfontein.

The following are particulars of the result of operations on the New Kleinfontein property for November: Stamps, 210; days run, 29·228; tube mills, 4; tons milled, 50,400; gold recovered, 16,845·850 fine ounces: net value, £70,767 13s. 6d.; profit, £23,869 8s. 6d.; working costs (excluding development), 16s. 11·293d.; development to working costs, 1s. 8·031d.; total working costs, 18s. 7·324d.; capital expenditure, £2,360 0s. 8d.

New Eland Diamonds.

The following are the washing returns for November at the New Eland property: Loads washed, net of 16 cubic feet, 9,721; diamonds found, 1,879½ carats; percentage, 19·32. The lesser output is attributable to the breakdown of the boiler and minor other breakdowns, causing a loss of about ten days in washing operations. A new boiler was immediately purchased and is already installed. The plant generally is now working satisfactorily.

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THE GOLD FIELDS' RHODESIAN INTERESTS.

Progress at the Eldorado and Shamva Mines.

Messrs. A. T. Fraser and W. F. H. Dudgeon, who have been acting as consulting engineers to the Gold Fields Rhodesian Interests during the absence of Mr. H. A. Piper, have transmitted to the chairman and directors of the company an exhaustive interim report dealing with the position as on 30th September last. From this it is seen that the sphere of operations covers a wide area, embracing mines of varying grades and different characteristics. Dealing first with the general position, they state: "An all-round improvement in the affairs of the country is manifested by the increase in the population, larger area of land cultivated, increased railway receipts, Customs duties, importation and improvement of stock. The policy of the companies under our control which are approaching the crushing stage is to add to the stability of the position by the increase of the ore reserves, and the figures of 3,598,974 tons developed, containing £5,578,970, and showing estimated profit in sight of approximately £2,000,000, illustrate the position. The general output of gold for the whole of Rhodesia amounted to 635,939 ozs., value £2,677,809, for the year ended 31st August last—the latest figures obtainable. The mines for which we act as consulting engineers contributed during that period 248,411 ozs., value £1,044,361. The satisfactory feature, however, is the stability being created by the large increase in the ore reserves. The tonnage blocked out in mines under our engineering control amounted on the 30th September last to 3,936,748 tons, value of contents £6,481,264. Of this amount the Shamva Mines tonnage accounts for 2,203,912 tons, containing £2,323,513, the balance of 1,732,836 tons, valued at £4,157,751, or 48s. per ton, representing the ore reserves of the other mines under this Company's control."

Ample Native Labour.

They declare that the supply for mines and farms has been ample. Every effort is being made to ensure a regular supply, and the conditions under which natives are employed provide for their health, diet, and general good treatment. The railways, which reflect the activity prevailing in the country, show a marked improvement in their position during the last two years. The widening of the line from Salisbury to the Eldorado Mine to the standard gauge, which is contemplated, will be of advantage to the mine and to the numerous farmers who have now taken up land in the vicinity. The Falcon Mine is already connected with the main line at Gwelo, but the large volume of traffic which will follow the increased operations of this company and the contemplated extension of the line to Odzi, saving 200 miles to the port of Beira, necessitate heavier rails, and these we believe are being provided. Negotiations are proceeding to link up the Planet Arcturus Mine by rail to the main line, from which it is only twelve miles distant. As the mine is an important one, and is developing in a highly satisfactory manner, it is necessary to make this connection, so as to gain the best economic advantage. The line to the Shamva Mine is completed as far as Mazoe, and it is expected the rails will reach the mine by the end of the year.

Eldorado Banket.

Of this property they state, *inter alia*: During the past year development work has been pushed ahead on the 6th, 7th, 8th, and 9th levels, and the 10th level has just been reached and driving started from the foot of No. 1 winze. The main feature of the development work has been the absolute regularity of the main reef in its pitch and general occurrence from the 7th to 9th levels, the length of pay strike scarcely varying at all on any of these levels:—On the 7th level, 110 ft., 72 in. wide, average value 73.4 dwts. (calculated on old method); 8th level, 115 ft., 72 in. wide, average value 52.6 dwts. (calculated on old method); 9th level, 110 ft., 72 in. wide, average value 22.9 dwts. (calculated on new method). On the 9th level, and in the winze below to the 10th, the values have on the whole been well maintained; in this winze the reef pitches to the east, and consequently the last 30 feet or so were out of values. However, it is expected that only about 35 ft. of driving will have to be done on the 10th level before picking them up again. Down to 90 ft. the winze averages 16.2 dwts. reduced value over 68.6 inches. On the Parallel Reef a much more defined reef is being found on the 9th level extending back further westwards than on the 8th level, on which it will be remembered that this reef was rather broken in its occurrence. *Ore Reserves.*—At the 30th September, 1911, these stood at 174,240 tons. They now stand at 123,000 tons, the gold content of which is estimated at £390,502, as against £585,674 at the 30th September, 1911. This falling off in the ore reserves is due largely to the shorter length of strike on the 7th, 8th, and 9th levels compared with those above, and to the delay in sinking the main vertical shaft. Consequently a very much smaller tonnage has been able to be brought in, but the mine will be in a position to augment this tonnage when the new shaft is completed. *Main Vertical Shaft.*—This has been sunk to 911 ft. and timbered with steel setts. Unfortunately, due in a large manner to faulty surveying, this shaft has not been so far advanced as it was hoped earlier in the year, and it has been found absolutely necessary to go over the whole shaft again, putting in new additional setts and lagging it securely owing to the treacherous nature of the ground. All this work has consequently delayed the further sinking, which is so important to hasten on for the further development of the mine in depth, and to prevent the ore reserves showing a still further decrease at the end of the next year's operations. Every endeavour is being made to hasten on this work. *Milling Operations.*—The mill and cyanide plant have crushed and treated 87,154 tons, yielding 52,563.61 ozs., valued at £222,917, at a cost of £1 2s. 11d. per ton, the estimated profit per ton being £1 8s. 3d.

Shamva.

During the period under review the following work has been done at this mine—the Alaska Treadwell of Rhodesia:—The 2nd level has been completed, and shows by far the best results of any, both in value and width. The 3rd level has also been partially developed, there only remaining about 180 ft. of driving and two more small crosscuts to be put in. The results in the winze below the 3rd level to the 4th may be considered quite satisfactory. On the 1st level and above practically no development work has been done. On the Prospect level the length of strike is taken at 740 ft., with an average width of 88 ft. and an average value of 3.8 dwts. On the 1st level the length is 920 ft., of an average width of 110 ft. and an average value of 4.14 dwts. On the 2nd level the length is 820 ft., with an average width of 97 ft. and an average value of 6.77 dwts. It must be remembered that on this level the greatest width of profitable ore has so far been exposed, viz., in No. 3 crosscut, a width of 215 ft., giving an average value of 9.73 dwts. On the 3rd level to date the indicated strike is approximately 800 ft., of an average width of about 27 ft. This level being at present unfinished, it is impossible to give final figures. *Ore Reserves.*—These at 1st October, 1911, stood at 1,554,761 tons, valued at £1,529,987, and at 30th September, 1912, 2,203,912 tons, valued at £2,323,513, thus showing an increase of 649,151 tons. Stoping.—It having been decided towards the end of 1911, on the recommendation of the consulting engineers, to create a broken ore reserve and at the same time find out not only the best and cheapest method of stoping a large body such as this mine presents, but also train the boys in this class of mining, stoping operations commenced early in February, since which date 103,871 tons have been broken at an estimated cost of 1s. 1½d. per ton. This with the development tonnage makes a total broken ore reserve to date of 127,271 tons. The estimated value of this broken ore works out, according to the result of daily sampling in the stopes, at a figure slightly higher than that calculated from the various blocks, as shown on the tonnage cartoon, which may be considered as most satisfactory.

The Falcon Mines, Limited.

The result of the year's operations has been most successful. During the year work has been done on the 3rd, 4th, and 5th levels. The old incline shaft has been sunk to the 6th level, and three winzes have been carried down from the 5th to the 6th and three crosscuts put through the ore body at the latter level. On the 3rd level the main ore shoot has been fully exposed, but the drive east still shows prospects of opening up further bodies, whilst the pay ore extends 700 ft. east of the shaft and 180 ft. west. On the 4th level the drive east is in 650 ft. On this side we appear to be reaching the limits of the pay shoot, although there is still a big width of reef in the face. West of the shaft payable reef extended 250 ft. On the 5th level the east drive is in 440 ft. The reef at this point is still of good value, as proved by the drive and crosscuts. West of the shaft the reef was payable for 140 ft. *5th Level.*—At 140 ft. west of the shaft (at which point values had gone out) a winze was put down to the 6th level. A crosscut at the bottom of this exposed a width of 15 ft. of reef, averaging 48.6 shillings per ton. Opposite the shaft another winze was put down, and crosscutting here gave a width of 77 ft., averaging 54.2 shillings per ton. A crosscut from the 3rd winze 200 ft. east of the shaft has up to date exposed 50 ft. of reef, averaging 66.5 shillings per ton. The face of the crosscut is still in good reef. The following are the figures for the pay shoots on the four levels mentioned:—

	Length.	Width.	Copper.	Gold.	Sterling.
	Feet.	Feet.	%	Dwts.	s.
3rd	880	17.2	2.45	3.68	39.22
4th	900	36.4	3.66	5.32	57.88
5th	580	46.8	3.16	6.07	55.88
6th	350	50.2	3.22	6.35	57.61

The 5th and 6th levels are not completed.

These values are calculated on a basis of 10s. per unit of copper per short ton (equal to £56* per long ton) and 4s. per dwt. of gold, high values being reduced. The incline shaft is now down to the 6th level, and drives will be put in to connect up the crosscuts already in. Intermediate crosscuts at 50 ft. will be put in later. The total footage from 31st August, 1911, to 31st August, 1912, is 5,483 ft., costing £23,044. *Main Vertical Shaft.*—This is now down 165 ft. The shaft is of four compartments and is lined with steel setts. It is laid out to cut the reef at a point 1,000 ft. on the incline from the outcrop. Crosscuts will be put in from the 5th and 6th levels to connect with the shaft. *Reduction Plant.*—A plant to treat about 15,000 tons monthly has been designed, and it is hoped that this plant will be completed about the end of 1913. Specifications which are now being got out include crushing and concentrating plant, sintering plant,

* At date the price of copper per long ton is £75.

blast furnace, and converters. Excellent deposits of high-class iron and lime for fluxes have been acquired in the neighbourhood, within reach of the railway. *Ore Reserves.*—These stand at 30th September, 1912, at 776.880 tons, of an average value of 48s. 3d. per ton contents. The value is calculated on a basis of 10s. per unit of copper per short ton (equivalent to £56 per long ton of copper) and 4s. per dwt. of gold. High values are reduced. This total includes 170,000 tons of oxidised ore in the upper levels, averaging 6.2 dwts. of gold and 0.63 per cent. of copper, equivalent to 31.1s. per ton. At 30th June, 1911, the sulphide ore reserves (calculated on the same basis as above) amounted to only 148,658 tons, of an average content of 38.2s. per ton. Working costs, including loss in residues, are estimated at 34s., leaving a profit of 14s. 3d. per ton, with copper at £56 per ton. The total profit in sight therefore amounts to over £500,000. There is no doubt that the Falcon constitutes a most valuable property. The present appearance of the mine underground as evidenced by the latest developments is most satisfactory. Experiments made on a large scale have shown that the treatment, although expensive as must be the case in a gold and copper ore proposition, presents no mechanical or metallurgical difficulties.

THE GENERAL MINING CORPORATION IN RHODESIA.

Opening up the Beatrice Mine—Encouraging Developments Secured—Good Values at the Eighth Level.

Although the majority of the large Witwatersrand mining houses appear to have more or less renounced Rhodesia, it is at least interesting to learn that the interest of the General Mining and Finance Corporation in that country has exhibited a marked appreciation in value during the past few months. The property we refer to is the Beatrice, in which the House of Albu obtained a dominating interest at the time of the boom in 1910. It may be recalled that so soon as the General Mining and Finance Corporation definitely had become identified with the venture a powerful electrical pumping plant was ordered and the work of dewatering the mine proceeded with. For some time the results secured were indifferent and there can be no denial of the fact that about the middle of this year the position was far from promising.

A Much Improved Position.

A month or two ago the mine was inspected by Mr. R. Pill, joint technical adviser to the Corporation. Mr. Pill measured up and sampled the major portion of such workings as were accessible and outlined a scheme of development which has been carried out by Mr. McKinnon (formerly of the New Goch), manager of the mine. It is most satisfactory to learn that this programme of exploration has been productive of the most encouraging results. The geological conditions obtaining on the property cannot as yet be said to be properly understood. There are apparently five distinct ore chutes in the Beatrice, all of which trend towards the south-west. The lode matter consists of calcite and quartz with a diorite filling and the precious metal is contained in the quartz. Four months ago some of the faces were in fair values but on the whole the mine scarcely looked like becoming a profitable concern. The main, or central, shaft has now been sunk to a depth of about 820 feet and the eighth level accordingly is about to be opened out. Values over a stoping width in the winze below the seventh level are very good and there appears to be a distinct likelihood of a fairly extensive section of profitable ground being opened up in this portion of the property. Before sinking the shaft to a greater depth it is intended to drive east and west for two or three hundred feet, and the results secured from this work should enable the controlling corporation to formulate some more definite scheme of exploitation on a larger scale than is at present warranted. In regard to other important working points it is to be noted that on the No. 4 shute work had a few months ago been proceeded with down to the fourth level. Here the fifth level has just been reached and the values are distinctly more promising. Values in the No. 3 shute to the north of the shaft have been re-located. In the winze from the sixth level to the north of the shaft the lode is "horsed." In the upper portion practically no values have been located but good values have been obtained on the footwall section.

An Encouraging Outlook.

Taken altogether the position of the property to-day is distinctly promising and the progress of further development will be followed with the keenest interest. In conclusion it may be remarked that the Beatrice mine consists of fifty-eight claims, in the Hartley district, and situated about thirty-six miles by road south-west of Salisbury. On these claims are erected a 10-stamp mill with 1,050 lb. stamps, housed in a building capable of accommodating 20 stamps, complete with cyanide and power plant and necessary buildings. About two years ago, two gas engines and producer plant driving two 125 k.w. generators were also installed for pumping the mine by motor-driven high lift centrifugal pumps of a total capacity of 50,000 gallons per hour. Very extensive ancient workings exist on the outcrop of the Beatrice reef, where they are to be seen almost continuously for a length of 1,600 feet. The reef dips about 53 degrees to the east, and with an average stoping width of approximately 30 inches. The main shaft, 16ft. by 6ft., was carried down by the former owners to a depth of 510 feet, and there are various other smaller shafts on the property. Milling was carried on by former owners and tributors at intervals between February, 1901, and February, 1908, when the mine became flooded. The operations referred to resulted in the recovery of some 52 822 ozs. of native gold. The General Mining and Finance Corporation, Ltd., originally acquired a three-fourths interest in this mine, and subsequently purchased the remaining one-fourth interest, and it has also several blocks of claims adjoining or in the immediate vicinity.

City and Suburban.

The following are the results of operations at the City and Suburban for November: Tons milled, 26,496; gold recovered, 11,760 fine ozs.; profit, £20,361.

East Rand Proprietary Mines.

The following is the text of a cablegram despatched to the London office of the East Rand Proprietary Mines this week giving the results of operations of the company for the month of November, 1912:—"The results of last month's operations are as follows:—820 stamps milled 149,200 tons; 58,071 ozs. of fine gold recovered from all sources; £90.502 profit for the month." Monthly profits:—January, £67,108; February, £75,609; March, £101,362; April, £98,596; May, £95,024; June, £92,256; July, £91,262; August, £90,450; September, £87,502; October, £91,016; November, £90,502.

Carolina Asbestos Company, Ltd.

The report of the directors for the year ended 30th September, 1912, to be submitted at the sixth ordinary general meeting of shareholders, to be held in the Board Room, Consolidated Gold Fields Buildings, Simmonds Street, Johannesburg, on Friday, 20th December, 1912, states:—The property comprises all the rights to asbestos on the farm "Diepgezit" No. 33, district Carolina, together with facilities for working same. No work has been carried out at the property during the year, neither have your directors been successful in leasing the property on tribute, or selling same. The expenses during the year, which consisted almost entirely of administration expenses, amounted to £157 11s. 10d., which has been added to the amount standing to the debit of income and expenditure account at 30th September, 1911, making the total debit to that account £3,826 11s. 5d.

Rhodesian Section.

LATEST MINING NEWS.

The October Output—Globe and Phoenix Developments—Hartley District Returns—The Toronto Claims—Lonely's Quarterly Report—Jumbo G.M. Co.—United Rhodesia—The Gaika's Year—A Katanga Record—North Charterland—Cam and Motor—Falcon Mines.

THE total value of Southern Rhodesia's mineral output for October has been officially declared at £244,967, as compared with £241,697 in September. The complete figures for the two months read as under:—

	September.		October.
Gold	£230,573	.....	£230,072
Silver	1,726	.....	1,717
Lead	910	.....	817
Chrome Iron ...	1,275	.....	5,750
Coal (Sales) ...	7,213	.....	6,611
Total	£241,697	.....	£244,967

From the foregoing it will be seen that with the single exception of the chrome iron output, which marked a value-increase for the month of £4,475, all the various items were somewhat reduced in amount. On the whole, however, and particularly in view of the prevailing drought and the consequent enforced closing down of a number of small mills, the result is satisfactory; it is in fact rather better than could reasonably have been expected. The total gold output shows a decrease for the month of only 108 ozs., valued at £501, while compared with the corresponding month of last year it marks a gain of no less than 2,691 ozs. in weight and £11,210 in value. It may be noted that the ten completed months of this year, when compared with the same period of last year, show a gain in the gold output of about £46,000.

* * * *

The following are the official details of the development work on the Globe and Phoenix mine for October:—New main shaft, total depth 249 ft. 12th level (station reef) South drive from main shaft, has advanced 82 ft., average width of reef 13 ins., average value over 30 ins. 7 dwts. 18th level No. 3a winze, North, East portion has advanced 19 ft., average width of reef 5 ins., average value over 30 ins., nil. 19th level drive North from No. 2a winze. E.P. has advanced 55 ft.; average width of reef 6 ins., average value over 30 ins., 27 dwts. 19th level W.P. drive South from No. 2a winze, has advanced 104 ft., average width of reef 11 ins., average value over 30 ins., 89 dwts. 19th level drive North from underlay shaft, West Portion, has advanced 80 ft., average width of reef 8 ins., average value over 30 ins., 31 dwts., next 28 ft., average width of reef 5 ins., average value over 30 ins., 1 dwt. 19th level No. 2 raise North from underlay shaft, West Portion, has advanced 13 ft., average width of reef 7 ins., average value over 30 ins., 22 dwts. Cross-cutting for month 32 feet.

* * * *

The total output from the Hartley district for last month, viz., 13,902·46 ozs., constitutes a record. This figure, of course, cannot be maintained while the drought continues. Rumour has it that several properties, notably the Owl, are on the point of closing down, that is as far as milling is concerned. Mr. Broun, the Mining Commissioner, who has recently returned from an extended tour of the district, states that the Umsweswe and Umniati rivers are completely dry. Trial crushings are contemplated at the following during the current or early next months:—Ebenezer (Spring & Pexton), Peacock (Wellington Mines, Ltd.), Norman (Union, Mashonaland, Syndicate), and the Cash (J. D. Kelleher). The Hartley district was the only one to send in improved output figures for October—13,902 as against September's 12,608. The number of producers in this district was unchanged. Good returns noticeable were those from the Acorn (378 ozs. from 460 tons), Brilliant (588 ozs. from 600 tons), Eiffel Blue (784 ozs. from 1,378 tons), the Giant (4,202 ozs. from 10,786 tons), Glencairn (257 ozs. from 352 tons), Kanyemba (431 ozs. from 300 tons), Owl (631 ozs. from 1,360 tons), Pickstone (562 ozs. from 210 tons), Shepherds (578 ozs. from 590 tons), and Washington (323 ozs. from 420 tons). The return of the Thistle-Etna to the list of producers took place during the month, the result of the month's work being 1,021 ozs. gold from the 2,600 tons treated.

* * * *

The board of the Toronto (Rhodesia) Syndicate in London has received the following cablegram from the property at Umtali:—"Adit No. 4: The east drift from winze (at a depth of 125 ft. from the surface) has been driven 8 ft. The lode here is worth, by assay, 33 dwts.; the width is 3 ft., inclusive of a leader of 1 ft."

* * * *

The following is an official summary of the report of the consulting engineer of the Lonely Reef G.M. Co. for the quarter to September 30:—Development work, 894 ft.; added to ore reserves, 18,695 tons; sent to mill, 11,360 tons; present ore reserves, 160,410 tons; average value, 1 oz. 2·76 dwts. Mill ran 81·12 days, crushed 11,360 tons, yielded 10,895 ozs. fine gold; average, 19·18 dwts. per ton crushed.

* * * *

The directors' report of the Jumbo G.M. Co. for the three months ended September 30 last states that the ore crushed during the quarter amounted to 9,200 tons, the reserves at September 30 being 5,963 tons and the average value 9·41 dwts. The yield totalled 3,552 ozs., or 7·722 dwts. per ton treated. Expenditure at the mine for the period was £14,656, or 31s. 10d. per ton crushed.

* * * *

In their report of the United Rhodesia Gold Fields for the year ended July 31 last, the directors state that at that date the gold mining claims registered in the name of the company numbered 1,037. At King's Daughter and Violet no crushing has taken place during the year. The claims were leased in October, 1911, and development has been steadily pushed ahead by means of two adits, with the result that two reefs, called the "Back" and "Front" reefs, have been cut through in the "Main" adit.

* * * *

In presenting their tenth annual report of the Gaika G.M. Co., together with the accounts for the year ended June 30 last, the directors state that the issued capital has been increased to £273,495, by the issue of 3,000 shares at par in purchase of the Robin Hood mine, and of 10,000 shares at a premium of 22s. 6d. per share. The net surplus totals £21,494, which the directors recommend be disposed of as follows: (1) By paying a dividend of 5 per cent., absorbing £13,671. (2) By carrying forward the remainder, viz., £10,81.9 The directors have written off the whole of development costs for the year, although the ore reserves have been considerably increased, being at June 30, 57,755 tons of an average value of 15·1 dwts. per ton and 14,000 tons of rubble valued at 3 dwts. The development of the mine has been energetically carried out. Results for the year: 34,243 tons crushed; total production, 14,636 ozs.; total value, £61,522. The mine working costs for the twelve

months have averaged 19s. 2·82d. per tons of ore milled, exclusive of development cost, the whole of which for the year have been written off against profits.

* * * *

The last issue of *L'Etoile du Congo* reports a record smelting at Lubumbashi, the total copper output for October being 600 tons, which is a Katanga record. Mr. Horner, adds the paper, has every hope of breaking this record with the present month's output.

* * * *

The North Charterland Exploration Company (1910), Limited, who are the owners of the mineral rights over 10,000 square miles in North-Eastern Rhodesia, have received the following cable from their mining engineer at Fort Jameson, giving the latest results of the prospecting work in progress within the company's concessions:—"Lutembwe Reef, No. 2 level, have driven in upon the reef 50 ft., general average 1 oz. over 8 ins. Gundanewala reef, first 20 ft. sinking, general average 1 oz. 7 dwts. over 6 ins. Discovered new reef, south-west extension, Lutembwe reef, highest assay 6 ozs. 7 dwts. Further discoveries being made on this belt. Makali reef, No. 1 cutting 18 ins. assays 1 oz. No. 4 outcrop, samples assaying 1 oz. 2 dwts. Makali south reef, outcrop of reef assays 12 dwts. Maliango reef, No. 3 outcrop, samples averaging 1 oz. 1 dwt. Kapoka reef, outcrop of reef assays 11 dwts."

* * * *

The following is a summary of a report which has been received by the mail by the directors of the Cam and Motor: Motor Mine:—No. 5 level: Main south drive advanced 80 ft., a total of 298 ft. south of No. 1 shaft. Values average 7·2 dwts. over 72 ins. Last 20 ft. driven average 10·6 dwts. over 75 ins. Cross-cut east 155 ft. south of No. 1 shaft has been started and extended a total length of 15 ft. The total payable width of lode, including the drive at this point, is 14 ft. 6 ins., averaging 8·6 dwts. Cross-cuts east and west 205 ft. south of No. 1 shaft have proved payable width of lode of 13 ft. 6 ins. averaging 8·5 dwts. Cross-cut west 255 south of No. 1 shaft has been started and extended a total length of 3 ft., the values averaging 15·1 dwts. Winze at No. 1 shaft sunk a further 31 ft., total depth 38 ft., averaging 5 dwts. over 71 ins. Winze 155 ft. south of main cross-cut sunk a further 29 ft. to a total depth of 76 ft., the values averaging 5·2 dwts. over 63 ins.

* * * *

The report of Falcon Mines for the year ended June 30 states that, including 100,000 tons of ore already exposed between the fifth and sixth levels, the total ore reserves at that date were about 730,000 tons, containing a total estimated value of £1,757,000, or, on the basis of the present price of copper, over £2,100,000. The tonnage partly blocked out, but not included in the actual reserve, it is stated, is fully as great as it was in the previous year. The erection of the plant to deal with 500 tons per day is being proceeded with, and the engineers hope to have the complete plant at work before the end of 1913. On the basis of the average value of the ore so far developed, with working costs at 35s. per ton and with copper at £56 per ton, the profit, when the present plant is completed, should exceed £120,000 per annum, or, with copper at £75 per ton, £225,000 per annum.

Bucks Reef.

The Secretary writes, under date 30th November, 1912: I am instructed by my Board to enclose the following official communication to the Press:—"Owing to recent unsatisfactory results, the Board of Directors have decided to suspend all operations on the 15th December, 1912, and to endeavour to let the mine on tribute."

Rhodesia Chamber of Mines.

The report of the Executive Committee for the month of October, 1912, states: Receipts during the month amounted to £15 12s. 9d., and payments to £108 3s. 6d. The balance to credit of current account on 31st October was £229 8s. 5d. Fixed deposits totalled £2,300. The following is a summary of the returns of native labourers employed on Southern Rhodesian mines during the month of August and September, 1912:—Local, August 13,665, September 11,988; Portuguese Territory, August 6,633, September 6,321; N.W. Rhodesia, August 3,823, September 3,755; N.E. Rhodesia, August 5,140, September 5·101; Nyasaland, August 5,167, September 5,163; other sources, August 1,077, September 938; total, August 35,505, September 33,266. The number of natives employed in September shows a decrease of 4,128 when compared with the corresponding month of 1911. The distribution during the month of July and August was as follows:—Producing gold mines, July 24,264, August 23,222; non-producing gold mines, July 11,350, August 11·121; coal and other mines, July 1,209, August 1,162; total, July 36,823, August 35,505. A letter has been received from Mr. Henry Birchenough, C.M.G., stating that the committee's representations to the railway companies in regard to railway rates, referred to in last month's report, will be laid before the boards and receive consideration. The committee have had under consideration certain resolutions forwarded by the Bishop of Mashonaland, which were passed by the recent Anglican Synod asking for support for the introduction of legislation to ensure one day's rest in seven being granted to all employees. The committee have replied that they are in accord with the principle of the resolutions, but pointing out that the conditions of mining in this country make the running of mills and reductions works on Sundays necessary. The committee have had under consideration certain resolutions arrived at by the Chamber of Mines, Salisbury, and the Rhodesian Agricultural Union, designed to secure the amendment of the Mines and Minerals Ordinance, in order to provide for the following matters:—Filling up of prospecting shafts, etc.; fencing of farms on gold belts, reservation of areas on farms against pegging; cultivation of unworked claims; protection of cultivated lands; and unused water from mines. The following other matters have received the attention of the committee: Pass Law; Geological Survey; Isolation Hospitals; Kafir Beer Ordinance, etc. The output of gold from Southern Rhodesia for the month of October has been declared at 54,665·75 ozs. fine gold, valued at £230,072, being a decrease of 108·07 ozs. in weight, and £501 in value, as compared with the month of September. The following amounts and values of other metal and mineral products were also declared:—Silver, 14,792·19 ozs., valued at £1,717; lead, 49·39 tons, valued at £817; chrome iron, 2,576 tons, valued at £5,750; coal, 19,937 tons (sales), £6,611. The total value of the gold and mineral production was thus £244,967, as compared with £241,697 in the month of September.

The "Natal Mercury" Jubilee Number.

The *Natal Mercury* is to be congratulated on the publication of a souvenir number on the occasion of the diamond jubilee of the journal, which took place on November 25. The paper has made enormous strides since the publication of the first number, as can be seen from the copy of the original number inserted as a supplement in the souvenir. The first two pages of the souvenir number are devoted to printing messages of greeting from many well-known Statesmen and public men. Lord Gladstone, in writing to the proprietors, says: "I must associate myself with the cordial congratulations which you will receive from the numerous friends of the *Natal Mercury* on the occasion of its Diamond Jubilee. The *Mercury* has a record of which you and your colleagues may well be proud, and I heartily wish it prosperity now, and through long years to come." Other messages are reproduced from Lord De Villiers, Lord Selborne, Lord Milner, Lord Roberts, Sir Walter Hely-Hutchinson, Sir Frederick Moor, Sir Henry McCallum, Sir Matthew Nathan, and others. In the sixteen pages of the jubilee number space is found in which is told the story of the *Natal Mercury*, from the time of the founding of the journal by Mr. Jeremiah Cullingworth to the present day, and excellent illustrations are shown of members connected with the conducting of the journal from its inception, while interior views are given of the present large building and the machinery.

RHODESIA'S MINERAL OUTPUT FOR OCTOBER.

Details for the Month—A Slight Decrease.

We have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of October, 1912, with comparisons and values:—

GOLD.

Note.—All the declarations are in fine gold.

MATABELELAND.

Bulawayo District—	No. of Stamps.	Tons Treated.	Yield. Ozs.	Value. £
Agincourt (Est. S. Roodt, deceased)	5	422	332.76	1398
Alice (Est. R. Barkley, deceased) ...	10	1251	252.73	1061
Do. (tailings)	—	856	61.87	260
Antenior (W. J. Lane)	2	120	97.49	409
Do. (tailings)	—	150	15.07	63
Bengali (Hicks and Arbery)	5	104	69.51	292
Big Ben (W. E. Hunt)	4	123	125.99	529
Do. (tailings)	—	374	260.30	1093
Bilhah (M. E. Weale)	2	40	7.46	31
Bobs (Bobs Reef Synd.)	5	130	15.74	66
Bridge (F. D. Roscoe)	(2H)	266	78.39	329
Bucks Reef G.M., Ltd. (Bucks, Prestwood, and Handcross)	5	885	311.54	1308
Do. (tailings)	—	600	35.69	150
Burton (W. Holmes)	5	400	67.05	282
Bushtick Mines, Ltd.	20 1T	5545	220.35	925
Do. (tailings)	—	3023	420.58	1766
Do. (slimes)	—	2555	430.17	1807
" C " (D. and C. Synd.)	10 1C	2141	96.69	406
Do. (tailings)	—	1680	154.47	649
Do. (slimes)	—	461	126.56	532
Claremont Mines (Rhod.), Ltd., (Claremont, Nelly Extra)	20	2713	584.96	2457
Clean Up (New Clifton G.M. and D. Co., Ltd.)	(10)	220	104.03	437
Eagle A (Peard & Macdonald & Co.)	5	583	266.04	1117
Do. (tailings)	—	288	36.92	155
East Gwanda Mines, Ltd., Geelong (Est. W. Hogg, deceased)	15	1500	240.35	1009
Glen (A. Fraser)	3	108	48.52	204
Gorleston & Hantsholm (J. O. Jansson)	(10)	100	44.69	188
Imbusine (Cumings and Berry)	4	501	199.75	839
IXL tailings (Forbes Rhod. Synd.) ...	—	312	24.20	102
Jumpers (A. H. Newton)	5	120	41.12	173
Koba (Koba Syndicate)...	5	140	39.60	166
Li Hang Chang (Comrie (deceased)and Brice) (tailings)	—	320	32.17	135
Limes (D. Vincent)	5	128	43.96	185
Lonely Reef G.M. Co., Ltd. 15	3T	3862	959.97	4032
Do. (slimes)	—	3862	2532.70	10637
Mamba (J. M. Stone)	5	50	25.97	109
Matabele 3 (R. M. Nairn)	10	1312	444.17	1865
Do. (tailings)	—	855	65.91	277
Matabele Queens' Co., Ltd.	10	1570	543.04	2281
Do. (tailings)	—	1570	389.40	1635
Do. (slimes)	—	783	87.30	367
Minnie's Luck A (Mrs. C. M. Reid).	5	570	69.13	290
Mystery A1 N (W. Souter)	5	335	139.68	587
N'daba (M. Westenberg)	2	11	6.43	27
Nelly (F. D. Roscoe)	2H	114	129.08	542
New Clifton G.M. & Dev. Co., Ltd. (Entambie) (tailings)	10	365	76.76	322
New Eclipse (J. R. Stewart)	—	305	47.53	200
Do. (tailings)	5	780	372.56	1565
Newery (E. V. Campbell) pannings ...	—	230	25.82	108
Nita (J. Gardner)	—	—	1.34	6
Northern Star No. 2 (Peel's Rhod. Synd., Ltd.)	5	160	34.27	144
Do. (tailings)	10	513	180.68	759
Old Nic (Chart. & Gen. E. & F. Co., Ltd.) 15	—	400	16.93	71
Do. (tailings)	4P	1490	594.13	2495
Penzance (R. Urquhart)	—	1052	102.76	432
Do. (tailings)	2	90	13.45	56
Percival (E. P. Hall)	—	80	26.88	113
Premier (Sellick & Collins) Sep.	5	165	44.02	185
Rainbow D.B.S. (P. Allport)	2	51	17.90	75
Red Rose (C. G. Bancroft)	5	251	100.14	421
Redrup Kop 1E (Forbes' Rhodesia Syndicate, Ltd.) 5	3	200	24.67	104
Do. (tailings)	1C	1475	1.98	8
Do. (slimes)	—	675	101.69	427
Reward (Kay and Cock)	—	836		
Riverbank (R. Martindale)	1H	200	15.65	66
Riversdale (Bruhns & Schwarz)	2	20	9.13	38
Suffolk (J. A. Warwick)	5	300	69.09	290
Susanna Mines, Ltd. (Susanna, Lady Lima, and Yellow Aster)	3	370	75.21	316
Do. (tailings)	8	902	506.52	2127
Do. (slimes)	—	515	150.69	633
Arump (J. W. Thraves) clean-up ...	—	135	20.76	87
Tuff Nut (King's Synd.)	5	5	7.59	32
Do. (tailings)	5	420	376.62	1582
Wanderer's Rest (Wheeler, Davis, and Rintoul)	—	300	55.72	234
	5	498	182.35	766
Bulawayo District Total			13,532.34	56,834
Gwelo District—				
Arizona No. 2 (A. J. Marchant).. ...	5	175	58.77	247
Arizona No. 2 S (L. R. Evans)	2	130	150.28	631
Beacon Hill 1 (R. Aserman)	2	368	177.80	747
Bradford (tailings) (J. Maleham).. ...	—	200	7.73	31
Broad Arrow (F. Ewing)	5	210	33.56	141
Cinderella (P. Burt) dry crushing and cyaniding	—	333	54.77	230
Csardas (Wolfshall Syndicate)...	10	550	397.62	1670
Do. (tailings)	—	400	124.44	522
Do. (slimes)	—	145		
Early Bird (Saddler & Holloway).. ...	5	112	23.28	98
Empire Day (S. Black) Sept.	2	24	11.26	47
Gaika G.M. Co., Ltd. 5	1C	2520	975.99	4099
Do. (tailings)	—	1418	122.90	516
Do. (slimes)	—	1812	168.22	707
Globe and Phoenix G.M. Co., Ltd. 40	10P	6850	8746.69	36736
Do. (concentrates)	—	327	528.65	2220
Gretna Green (M. L. Price)	5	260	125.03	525
Invulnerable (A. E. West)	5	140	56.39	237
King's (P. S. Warden)	5	382	171.84	722
Moss (James & Morrisby)	2	51	94.66	398
Nevada (C. C. Hendrie)	2	183	10.77	45
New Dunraven G.M. Ltd.	5	700	111.13	467
Do. (tailings)...	—	418	34.45	144
North Bonsor (Cornish Syndicate) ...	15	1600	306.38	1287
Do. (tailings)	—	1085	72.77	305
Other Sources (Nicholls' Bros.)	—	—	29.97	126
Pompei (Pharos Synd.)	2	72	38.47	162
Do. (tailings)	—	160	4.86	20
Pretty Polly (New Rhod. R. Co., Ltd.)	5	575	192.51	809
Do. (tailings)	—	385	50.26	211
Red Hill Dev. Syn. Ltd. (Redhill) ...	1C	930	72.43	304
Do. (tailings)	—	564		
Selukwe Columbia G.M., Ltd. 1C	3P	3213	1022.06	4293
Do. (concentrates)	—	146	83.52	351
Do. (tailings)	—	2207	141.20	593
Do. (slimes)	—	1019	63.40	266
South Bonsor (Ideal Synd.)	10	336	109.73	461
Una (Gilday & O'Connor) (tailings) ...	—	450	14.93	63
Wanderer (Selukwe) G.M., Ltd. 4GR		19200	1861.05	7816
War Wolf (Warwolf Synd.)	5	130	22.11	93
Willow (W. C. Spargo)	5	150	28.79	121
Winston (J. Jones) September	6	40	14.76	62
Gwelo District Total			16,315.43	68.523
Matabeleland Total			29,847.77 ozs.	
Value			£125,357	

MASHONALAND.

Hartley District—				
Acorn Gold Mines, Ltd.	5	460	207.56	872
Do. (tailings)	—	761	171.17	719
Alta (Yellow Jacket Synd., Ltd.).. ...	2	15	10.36	44
Battlefields (Minaar & McArthur) ...	2C	1320	452.48	1900
Do. (tailings)	—	1056	137.57	578
Do. (slimes)	—	264		
Black Chief (S. Macintyre)	(5)	160	46.96	197
Blue Rock (Ellsmoor & Goodyer) ...	2	128	77.51	326
Do. (tailings)..	—	104	49.45	208
Bridge (Mrs. S. Smith)	5	13	6.93	29
Brilliant (Mabel's Luck Synd.)	5	600	474.52	1993
Do. (tailings)	—	360	113.98	479
Colossus A (F. W. G. Richards) tailings) Sept. and Oct.	—	800	41.02	172
Concession Hill and W. Exten. C. W. Simpson) 5	1C2P	1792	355.66	1491
Do. (tailings)	—	1976	95.53	401
Corsilla C (H. W. Roberts) pannings..	—	—	0.37	2
Crown H. (Crown Synd.)	2	110	19.21	81
Do. (tailings)	—	100	20.14	85
Cryptic (H. O. Herald)	2	12	15.32	64

	No. of Stamps.	Tons Treated.	Yield. Ozs.	Value £
Dreadnought (W. E. Masters)	C	450	32.87	138
Duke No. 1 (Jose and Mnuro)	2	62	37.53	158
Duke No. 4 (J. Bertelsen) undeclared September	—	—	2.14	8
Ebinezer (Spring, Spring & Paxton)	3	6	6.96	29
Eiffel Blue & E. Ext. (Willoughbys Con. Co., Ltd.)	10	1378	702.13	2949
Do. (tailings)	—	925	82.26	346
Garnbrook (H. B. Christian)	1H	246	21.01	88
Do. (tailings)	—	140	6.45	27
George 1. (Heroine G.M. Co., Ltd.	2	185	55.77	231
Giant Mines of Rhodesia, Ltd.	30 2T	10786	4202.86	17827
Glasgow Mines, Ltd.	5	165	101.87	428
Do. (tailings)	—	109	34.42	144
Glencairn No. 3 (Glenrosa Synd.)	4	352	214.09	899
Do. (tailings)	—	533	43.83	184
Golden Valley (J. Mack)	10	605	148.54	624
Do. (tailings)	—	305	68.81	289
Goldmore (H. B. Gibbons)	2	120	100.40	422
Do. (tailings)	—	100	47.00	197
Great Tontine (Yellow Jacket Synd.)	2	306	48.80	205
Inez (A.S.T. Synd.) (slimes)	—	1015	37.81	159
Kanyemba (Kanyemba Synd.)	5	300	358.09	1504
Do. (tailings)	—	176	73.56	309
Kyrenia (J. Mack)	5	562	124.56	523
Luke (Luke Synd.)	3	100	89.45	376
Mali (McAdam and Harrill)	2	160	73.65	309
Do. (tailings)	—	130	27.77	117
Masterpiece G.M. Co., Ltd.	5	460	102.25	429
Do. (tailings)	—	240	18.75	79
Moliere (H. Moser) September	5	450	66.60	280
Do. (tailings)	—	750	30.70	129
Oleander G.M. Co., Ltd. (Oleander Arlandzer and Arlandzer 4)	3	390	147.28	618
Do. (tailings)	—	165		
Do. (slimes)	—	225	66.65	280
Owl (A. Rolfe)	10	1360	488.64	2052
Do. (tailings)	—	902	143.49	603
Peacock (Wellington Mines, Ltd.)	(5)	129	97.90	411
Pickstone Gold Mines, Ltd.	4	210	443.18	1861
Do. (tailings)	—	120	119.22	501
Rome (Monarch (Tati) G.M. Synd., Ltd.), September and October	5	1104	78.08	328
Rouge (Oswald and Shine)	5	363	42.04	177
Seigneury (Central Min. & Invest. Corporation, Ltd., and N. A. Arnold)	5	406	129.71	515
Shepherds (Phoenician (Rhod.) Co., Ltd.)	5	590	307.36	1291
Do. (tailings)	—	490	271.72	1141
Sid (Sebakwe & Dist. Mines, Ltd.)	5	689	340.32	1429
Sid (Sebakwe & District Mines, Ltd.)	5	689	340.32	1429
Tea (Homan Synd., Ltd., and Cent. Min. & Invest. Corp., Ltd.)	5	896	269.04	1130
Do. (tailings)	—	630	37.34	155
Tee Tee (W. F. McMahon) Sept.	5	45	10.64	45
Thistle Etna G.M. Ltd. (Etna & Dagon)	1C	2600	959.86	4031
Do. (tailings)	—	1272	61.79	259
Togo 2 (J. H. McDowell)	5	35	7.49	31
Try Again (H. R. Nicholl) (tailings)	—	540	38.16	160
Warm 1 (Union (Mash.) Synd.)	5	315	21.53	90
Do. (tailings)	—	400	25.02	105
Wartheg (C. Tallon) (tailings)	—	200	17.01	71
Washington (I. J. Minaar)	5	420	274.08	1151
Do. (tailings)	—	307	49.33	207
What Cheer D.B., 1 N.E. (H. Moser)	(5)	425	70.95	298
White Rose (J. Mack)	(10)	380	120.92	508
Hartley District Total			13.902.46	58,562
LOMAGUNDI DISTRICT—				
Alluvial (J. Gough)	—	—	18.72	79
Do. (R. G. Harding) Sept. and October	—	—	65.60	276
Do. (S. Jacobs)	—	—	2.63	11
Eldorado Banket G.M. Co., Ltd. 20 2C	8P	7223	3198.46	13564
Do. (tailings)	—	7200	1244.43	5278
Linnett (A. L. R. Morkel)	2	317	87.29	366
Lone Hill (Moll & Platt)	2	90	23.05	97
St. Ives (Oswald & Shine)	5	338	78.10	328
Tripolitania (P. Presot)	1D	—	2.06	9
Lomagundi Total			4,720.54	20.008
MAZOE DISTRICT—				
Ancient Mariner (L. Friend)	5	25	11.06	46
Commonwealth G.M. Co., Ltd.	(30)	400	48.45	206
Do. (tailings)	—	256	47.68	203
Do. (slimes)	—	144	17.67	75
Goth B (Goth Synd.)	2	67	20.89	88
Hay G.M. Co., Ltd. 10	1T	1087	228.65	922
Do. (tailings)	—	1087	288.63	1221
Honest (G. Brown)	3	69	39.67	167
Jumbo G.M. Co., Ltd.	30	3560	473.77	2011
Do. (tailings)	—	2230	468.68	1992
Do. (slimes)	—	1270	173.23	736
Lowland Chief (F. Adamson), clean up	—	—	19.86	83
Do. (tailings)	—	400	28.81	121
Mickey (B. G. Byerley)	2	110	116.46	489
Pierrot (J. H. Hall)	2	140	30.49	128
Rochelle (Montagu Dev. Synd., Ltd.)	D	6	3.76	16
Thornhill & Tat (Oceola G.M. Co., Ltd.)	5	697	267.76	1125
Umkulu (Llahsram Synd.)	2	213	85.25	258
Mazoe Total			2,370.97	9,993
SALISBURY DISTRICT—				
Mashona (B. G. Byerley)	2	46	111.34	468
Mont d'Or (Claxton & Russell)	2	164	78.08	328
Old Loyalty (Shamva Ilex G.M. Co., Ltd.)	5	368	132.16	555
Other Sources	—	—	16.72	70
Radnor 1 (Jones and Homan)	2	147	87.20	366
Virgin (J. Vorwerk)	1D	11	36.33	153
Salisbury Total			461.83	1,409
UMTALI DISTRICT—				
Cairndbu 2 W. (Cairndbu Develop. Synd., Ltd.), clean-up	—	—	13.81	58
Contact (D. Tullock) Sept.	3	32	8.69	36
Maggie W. (W. A. Hoole)	5	149	51.26	215
Mecca (Umtali Waterfall Synd.)				
Do. (tailings)	—	155	34.22	144
Do. (slimes)	—	200		
Montezuma No. 2 (Odzi Trib. Synd.)	2	65	19.21	81
Palmyra (J. de G. Birch)	3	55	22.23	93
Rezende Mines, Ltd. (Rezende and Penbalonga sections)	85	10300	1730.29	7342
Do. (concentrates)	—	178	680.99	2846
Do. (tailings)	—	1949	350.63	1487
Rezende D B T (Imbeza Synd. No. 2)	10	3521	357.71	1518
Do. (Concentrates)	—	6	93.09	392
Umtali Total			3,362.18	14.212
MASHONALAND TOTAL			24.817.98 ozs.	
VALUE			£104.715.	
GRAND TOTAL			54,665.75 ozs.	
VALUE			£230.072.	

SUMMARY.

Gold.	Ozs.	Value.
Matabeleland	29,847.77	£125,357
Mashonaland	24,817.98	104,715
Total	54,665.75	£230,072
Silver	14,792.19 ozs.	£1,717
Lead	49.39 tons	817
Chrome Iron	2,576 tons	5,750
Coal	19,937 ,, (sales)	6,611

TOTAL VALUE OF OCTOBER OUTPUT £244,967

Mine Ambulance Competitions.

The competition for the shield to be presented for the surface workers' competition will be held on Sunday, in front of the Recreation Hall, near the No. 2 shaft, Ferreira section, of the Ferreira Deep, Ltd. The Turffontein tram (via Booysens), leaving Market Square (W.) at 7½, 22½, 37½, and 52½ minutes past the hour, passes close to the spot, which is within five minutes' ride from the Market Square, Johannesburg. A Red Cross flag will fly from the top of the nearest headgear. Teams have been entered by the following mines, and as the result of a ballot they will compete in the order given :—Langlaagte Estate and G.M. Co., Ltd., "A" team; Modderfontein "B" Gold Mines, Ltd.; City Deep, Ltd.; Knight Central, Ltd., "A" team; Knight Central, Ltd., "B" team; Crown Mines, Ltd.; Geldenhuis Deep, Ltd.; Luipaardsvlei Estate and G.M. Co., Ltd.; De Beers Consolidated Mines, Ltd.; Van Ryn Gold Mines Estate, Ltd.; Langlaagte Estate and G.M. Co., Ltd., "B" team. The competition will commence at 10 a.m. sharp, and all teams must be on the ground at 9.30 a.m. in order to be in readiness, receive badges, etc., etc. If preferred, teams may bring their own stretchers, but the material which will be provided for splints, etc., must be utilised by all competitors. Plain triangular bandages must be provided by all teams. The attention of all competitors is drawn to the rules and conditions, particularly to No. 15, which provides that competitors shall not be allowed to communicate with those who have already competed, or with persons who may have seen the competition; to do so will disqualify the team.

MINING RIGHTS IN NATAL.

The Act and its Application Explained—Interesting Correspondence.

Sir Thomas Watt has published the following correspondence with the Secretary of Mines regarding mining rights over those farms in Natal where the minerals have been reserved by the Crown :—

Newcastle, November 12.

Mr. H. Warington Smyth, Secretary of Mines,

Mines Department, Maritzburg.

Re Natal Farms with Reservation of Minerals to the Crown.

Sir,—I regret very much that I had to vacate the chair at the meeting at Hatting Spruit on the 8th inst., in order to hurry back to Newcastle to keep a prior appointment, and I have no information as to what took place after I left, excepting that a second resolution was carried to the effect that the Government ought not to issue new or renew existing licences to prospect on private land, whether the Government has reserved the minerals or not, without the consent of the landowner where the land is beneficially occupied, unless the owner has granted a mineral lease—in which case the lessee will be presumed to have obtained the owner's consent. As the only newspaper report of the meeting that I have seen is incorrect and incomplete in several respects, I think it well to state in writing the purport of what I understood you to say in your speech at the meeting, in reply to my remarks, so that there may be no misunderstanding in future.

(1) In the first place, you stated that in the case of private lands where the minerals had been reserved by the Crown, Part IV. of the Natal Mines Act, 1899, does not apply, in the opinion of the Government, but that before issuing licences to prospect for minerals on such lands the Government proposes, as a matter of policy, to consult the landowners; but you made it quite clear that the Government does not recognise that the owners of land, where the minerals have been reserved, can validly object to the issuing of licences for prospecting on their land, and that in the case of such lands Section 60 overrides Section 59.

(2) With regard to those private farms that have already been pegged off by third parties without the owner's consent, you mentioned that the licences would not be renewed without giving notice to the landowners, who will have an opportunity of stating any objection to the renewal.

(3) On another point regarding the issuing of licences for the first time, you stated that a similar course would be adopted—namely, that the Mines Department would notify landowners, who would have an opportunity of stating any objection they may have to the issuing of licences to third persons.

(4) You also stated—but whether this was done at the public meeting, or at the prior Committee meeting, I cannot remember—that if the landowner himself is desirous of taking out licences to prospect for minerals on his own farm, he will have the preference over any third person, unless such person had acquired rights from him by lease or otherwise; in other words, that if the Department intends that the minerals on a certain farm shall be developed the landowner or any person acting under his authority will be preferred before outsiders.

(5) In reply to a question put by a member of the audience as to whether it would be a valid objection to the issue of a prospecting licence that the landowner required the whole of his land for farming operations, you said that, although you could not anticipate any decision that might be given by the Government, such an objection, if the facts were verified, would probably be held to be valid.

(6) You demurred to the construction placed on the circular issued by the Deputy Commissioner of Mines on August 27 last as conveying an opinion that leases of minerals granted by landowners were invalid where the minerals had been reserved by the Crown. I understood you to say that the circular was merely intended to inform the lessees that they were liable to take out licences for their own protection, and that the Government could not regard such leases of minerals by themselves as giving the lessees the right to mine. You expressed no opinion on the validity of leases as between lessors and lessees.

I think I ought to add that, although the meeting welcomed the new attitude of the Government regarding the issuing of licences, the resolution referred to at the head of this letter clearly indicates that those present still stand on the protection that they and I conceive is given to them by Section 59 of the Act. I shall be glad if you will inform me whether I have correctly stated in the six numbered paragraphs the purport of what you said at the meeting, and whether you have any objection to the publication of this letter and your reply, for the information of those concerned.—I am, etc.,

(Sgd.) T. WATT.

Office of the Minister of Mines,

Pretoria, November 22.

Sir,—I have the honour to acknowledge the receipt of your letter dated Newcastle, the 12th inst., on the above subject, copy of which was handed to me at the Durban Navigation Colliery on the 15th inst., when I was visiting that mine. I regret that my reply to your letter has been delayed by the fact that I have been on the move ever since its receipt, visiting collieries and farms in the Dundee and Hatting Spruit districts, as I had undertaken to do at the meeting on November 8 last. With reference to the points raised by you in your letter, I have the honour to reply as follows :—

(1) In the case of private lands where minerals have been reserved to the Crown it is held that Part IV. of the Natal Mines Act does apply, with the exception of Section 59, or such portion as may actually derogate from the rights of the Crown as reserved to it in the original documents of title, which are safeguarded by Section 60. Consequently, Sections 47 and 48 of the Natal Mines Act will apply to the issue of prospecting licences on these lands.

(2) Where a private farm has been already pegged off by third parties without the consent of the owner, notice will be given to the landowner, who will have an opportunity of objecting to the renewal of the licences. In the case where the landowner has leased or otherwise alienated his mineral rights, his consent to the issue of licences to the lessee will be presumed.

(3) In future the fourth paragraph of Section 48 will be strictly adhered to, under which, before any licence is issued for prospecting on private lands, notice will be given to the owner. In any case, outsiders will not be entitled to more than four claims (Section 47).

(4) Everything will be done to safeguard the legitimate rights of the owner, and, other things being equal, it will simplify administration if owners secure all the mineral rights over their own lands. If, however, third parties apply for prospecting licences under Part IV. of the Act, the Government must, of course, give fair consideration to their applications under Section 47 et seq.

(5) I am not able to state definitely what may in the opinion of the Minister of Mines constitute a valid objection on the part of the owner to the issue of a prospecting licence to third parties; but it is probable that any objection by an owner to the pegging without his permission of ground which includes homestead lands, kraal lands, gardens, houses, etc. (in contravention of Section 92, c) will be upheld.

(6) As you correctly state in paragraph 6 of your letter, the reference made in the circular issued to collieries by the Deputy Commissioner of Mines on August 27 was not intended to express an opinion as to the validity of agreements as between landowners and companies, under which owners have leased or alienated their mineral rights, but was intended to convey to the collieries that as between the Government and the collieries such leases could not be held as giving valid title to work the Government's minerals. Collieries working coal without title from the Government had therefore to be called upon to obtain proper title from the Government by taking out licences under the Act.

(7) With reference to your penultimate paragraph, I would draw your attention to the fact that the second resolution of the Hatting Spruit meeting quoted by you cannot be accepted by the Government in its entirety. As I pointed out at the meeting, Section 59 is entirely inconsistent with the exercise by the Government of its rights under Section 60 of the Act, and the reservations under which these farms were granted; and the Government is unable in the case of these farms to recognise any rights under Section 59. In so far as the resolution conforms with the principles of paragraph 4 of Section 48, in regard to notice to the owner of licences applied for and his right of objection, the Government is prepared to accept it for the future, it being considered that in this principle, unlike that of Section 59, there is nothing inconsistent with the exercise by the Crown of its full rights under the reservations.—I am, etc.,

(Sgd.) H. WARINGTON SMYTH

(Secretary for Mines; Commissioner of Mines for Natal).

To Sir Thomas Watt, K.C.M.G., M.L.A., Newcastle, Natal.

Glynn's Lydenburg.

The following information has been furnished, relative to this company's output for the month of November, 1912: Tons crushed, 3,304, yielding 1,614 fine ozs., valued at £6,809. Estimated profit for month, £3,370. Owing to the burning out of a transformer, the tube mill was closed down for the first half of the month.

Transvaal G.M. Estates.

The following information is given, relative to this company's output for the month of November, 1912:—Central Mines: Tons crushed, 13,000, yielding 7,890·735 fine ozs. Elandsdrift Mine: Tons crushed, 630, yielding 885·221 fine ozs. Vaalhoek Mine: Tons crushed, 1,220, yielding 472·668 fine ozs. Total value of month's output, £38,576. Total estimated profit for month, £22,898.

OCTOBER GRADE, COSTS, AND PROFITS.

Analysis of the Gold Production for the Month

THE usual monthly analysis of the gold production for October issued by the Chamber of Mines, is presented hereunder :—

THE WITWATERSRAND.

	Total value recovered. £	Value recovered per ton milled. s. d.	Total working cost per ton milled. s. d.	Total working costs. £	Working profit. £	Working profit per ton milled. s. d.
1. Aurora West United ...	18,754	25 11	20 1	14,506	4,203	5 10
2. Bantjes Consolidated ...	36,174	29 0	23 6	28,968	6,713	5 5
3. Brakpan Mines	92,439	30 4	16 6	50,352	41,375	13 7
4. Cinderella Cons.	25,155	27 0	25 1	23,012	2,189	2 5
5. City Deep	78,842	36 1	23 5	50,375	25,445	12 3
6. City and Suburban ...	50,777	37 3	21 11	29,451	20,643	15 5
7. Cons. Langlaagte	43,233	24 4	18 5	31,925	11,308	6 6
8. Cons. Main Reef	36,862	33 5	19 6	21,560	14,816	13 5
9. Crown Mines	258,925	30 10	18 2	152,195	103,989	12 5
10. Durban Roodepoort ...	15,228	21 7	15 8	11,063	4,163	5 11
11. Durban Rood. Deep ...	39,538	30 11	24 6	31,369	7,713	6 0
12. East Rand Proprietary	246,181	32 6	20 7	152,510	91,016	12 3
13. Ferreira Deep	114,421	41 5	21 3	58,403	54,215	19 9
14. Geduld Proprietary ...	18,992	27 2	20 9	14,475	4,470	6 5
15. Geldenhuis Deep	79,543	32 5	27 3	66,100	12,569	5 2
16. Ginsberg	21,804	28 8	19 2	14,562	7,242	9 6
17. Glencairn Main Reef .	17,726	15 4	13 7	14,668	3,060	2 10
18. Jumpers-cum-Treasury .	14,447	42 0	40 0	11,988	2,265	7 7
19. Jupiter	46,423	21 8	17 1	36,641	9,232	4 4
20. Knight Central	29,602	23 9	19 2	23,904	5,296	4 3
21. Knights Deep	81,981	16 4	12 0	60,166	20,818	4 2
22. Lancaster West	22,725	21 5	21 9	22,551	119	0 1
23. Langlaagte Estate ...	64,421	21 0	16 11	46,370	17,575	6 5
24. Luipaardsvlei Estate ..	15,283	20 9	18 3	13,421	1,676	2 3
25. Main Reef West	27,207	30 6	22 2	19,742	7,106	8 0
26. May Consolidated ...	16,821	22 6	15 10	11,612	5,022	6 10
27. Meyer and Charlton ...	30,660	42 6	18 1	13,050	18,039	25 0
28. Modderfontein B. ...	54,932	34 2	16 10	27,089	27.257	16 11
29. New Goch	26,221	19 3	16 7	22,167	4,046	3 0
30. New Heriot	21,519	34 6	21 7	12,719	8,538	14 6
31. New Kleinfontein ...	73,728	28 11	19 4	49,335	23,497	9 2
32. New Modderfontein ...	93,187	38 11	18 8	44,171	47.106	19 10
33. New Primrose	35,808	27 0	13 6	17,110	18,698	14 9
34. New Rietfontein	19,463	25 5	21 5	16,429	3.032	4 0
35. New Unified	17.012	28 9	20 8	11.966	5,048	8 9
36. Nourse Mines	79,670	28 1	20 0	56 149	22.669	8 1
37. Princess Estate	26,234	26 3	24 9	24,734	1,435	1 5
38. Randfontein Central ...	270.664	24 7	16 10	182,742	84,662	7 9
39. Robinson	102,370	37 11	14 7	38,856	60,977	22 11
40. Robinson Deep	76,034	29 11	18 1	45,248	30,930	12 4
41 Roodepoort United ...	30,567	19 8	18 8	28,444	2,021	1 4
42. Rose Deep	92,868	27 3	16 6	56,292	35,629	10 6
43. Simmer and Jack ...	82,584	22 0	11 4	42.530	39,179	10 5
44. Simmer Deep	43.943	15 11	15 6	42,728	703	0 3
45. Spes Bona Tribute ...	6,678	21 10	—	—	—	—
46 Van Ryn	55,497	28 3	15 11	31.357	24,186	12 4
47 Village Deep	75,672	30 7	20 6	51.291	24,519	9 10
48. Village Main Reef ...	89.648	41 10	17 9	37,795	50,095	23 7
49. Vogelstruis Estate ...	13,117	20 5	19 9	11.890	1,254	2 1
50. West Rand Central ...	3,453	31 7	32 9	3.249	202	2 0
51. West Rand Cons. ...	41,420	28 6	22 10	33,146	8.237	5 8
52 Witwatersrand	47,192	24 3	14 4	27,927	19,265	9 11
53. Wit. Deep	53,258	27 9	18 1	34,648	18.032	9 5
54. Wolhuter	37.784	26 2	17 10	25,729	14,840	10 4
Miscellaneous producera	19,505	—	—	—	—	—
Witwatersrand totals	3,135,172	28 0	18 3 53 cos.	2000680 53 cos.	1079334 53 cos.	9 10 53 cos.

The apparent small disagreement between working costs and profits per ton milled and value per ton is due to inclusion of value wo from accumulations and by-products.

OUTSIDE DISTRICTS.

HEIDELBERG—						
1. Nigel	19,637	27 11	23 1	15,885	3,531	5 1
2. Sub Nigel	10,161	43 7	32 0	7,326	2.680	11 9
BARBERTON—						
3. Barrett	1,334	8 6	—	—	—	—
4. Sheba	13,448	45 5	28 9	8,510	5,044	17 0
5. Sheba (Rosetta)	1,482	38 5	—	—	—	—
6. Worcester	5,012	18 11	15 3	4,033	1,104	4 2
LYDENBURG—						
7. Glynn's Lydenburg ...	7,676	41 8	18 9	3.478	3,091	21 8
8. Transvaal G.M. Estates	41,390	52 6	21 6	16,354	25,036	32 11
Miscellaneous producers	29,838	—	—	—	—	—
Total (outside districts)	129,978	37 6	23 0 6 cos.	55,586 6 cos.	41,386 6 cos.	17 1 6 cos.
Grand totals	3,265,150	28 3	18 4 59 cos.	2056266 59 cos.	1120720 59 cos.	10 0 59 cos.

The working profits declared for the Transvaal since the commencement of 1909 are:

	1909. £	1910. £	Inc. £	Dec. £
January	1,047,395	952,001		95,394
February	944,262	900,269		43,993
March	994,038	939,127		54,911
April...	1,019,288	955,240		64,048
May	1,038,292	990,607		47,685
June...	1,039,519	955,170		74,349
July	1,027,374	972,563		44,811
August	1,010,765	991,707		19,058
September	992,748	974,362		18,388
October	980,586	981,991	1,405	
November	995,971	977,120		18,851
December...	984,064	976,942		7,122
Totals	12,074,302	11,567,099		

	1910. £	1911. £	Inc. £	Dec. £
January	952,001	954,536	2,535	
February	900,269	898,732		1,538
March	939,127	973,470	33,343	
April	955,240	1,000,043	44,803	
May	990,607	981,788		8,819
June	955,170	987,557	32,387	
July	972,563	998,340	25,677	
August...	991,707	996,072	4,365	
September	974,362	979,328	5,006	
October	981,991	974,236		7,755
November	977,120	990,617	13,497	
December	976,942	991,145	14,203	
Totals	£11,567,099	11,725,897		

	1911. £	1912. £	Inc. £	Dec. £
January	954,536	1,021,073	66,537	
February	898,738	930,739	32,001	
March	973,470	1,245,321	271,851	
April	1,000.043	1,042,076	42,033	
May	981,788	1,110,463	128,675	
June	987,557	1,097,888	110.331	
July	998,340	1,092,849	94,509	
August	996,072	1,093,158	97,086	
September	979,328	1 080.983	101,655	
October	974,236	1,120,720	146,484	

The dividends declared during the nine months were:

	1911.		1912.
January	£124,782	.....	£99,782
February	23,699	.....	25.987
March	295,384	.....	257,528
April	64,500	.....	75,250
May	58,500	.....	46.000
June	3,649,891	.....	3,332.465
July	123,282	.....	41,391
August	105,134	.....	*Nil.*
September	204,750	.....	220.500
October	64,500	.....	93.737

The total dividends for the ten months were: October, 1911, £4,712,422; October, £4,192,640.

Van Ryn Gold Mines.

The net profit for the past year of the Van Ryn amounted to £282,882. The directors declared a dividend at the rate of 45 per cent. per annum.

Situation Wanted.

Advertiser seeks situation on small property in outside mining district. Amalgamating, cyaniding, smelting, &c. Experienced in suction gas plants, erecting and running same. Fitter by trade and capable of carrying out all repairs. Apply, J. H. S., c/o this office.

APPLICATIONS OF PRODUCER GAS.*

Producer Gas for Metallurgical and Heating Purposes—The Question of Fuels.

Broadly, producer gas has two general applications—for power and for metallurgical work. Three distinct types of gas-producer plants have been commercially manufactured in the United States, as follows: (a) Suction type; (b) pressure type; and (c) downdraft type. Besides these three a combination of the principles of up draft and down draft has recently been brought forward in the double-zone producer. Producer gas has for years been extensively used in various types of furnaces in the manfacture of iron and steel. This use has become more and more general during the last few years. In districts where the steel mills have had an abundant supply of natural gas no necessity for a substitute has been felt and no incentive for economizing the fuel supply has existed. The supply of natural gas, however, is by no means unlimited—in some places it has failed altogether —and the time when the gas will no longer be available in great quantities is near. Large users of this remarkable natural resource have had to recognize these conditions and to hold themselves ready to use artificial gas when the supply of natural gas becomes inadequate. The solution of their fuel problem is found in the gas producer, and at the present time there are within the natural-gas regions large installations of gas producers used for the operation of open-hearth furnaces. In the manufacture of producer gas for metallurgical processes the gas goes to the furnace directly from the producer without any cooling or cleaning.

Other Applications of Producer Gas as Fuel.

The abundance of natural gas and the multiplicity of uses to which it has been applied have led to a much greater appreciation of the advantages of gaseous fuel, and have helped to emphasize the value of the gas producer. During the past few years there has been great development in the utilization of producer gas not only for power purposes and the manufacture of iron and steel, but for other industries as well. Among the uses to which producer-gas fuel has been put are annealing, japanning, enameling, tempering, case-hardening, type-casting, yarn singeing, cooking, and the heating of moulds, wash kettles, ladles, stoves, and bakers' ovens. It has also been used quite extensively in brick, lime, and cement kilns, and in various types of ore-roasting furnaces. In using producer gas as a fuel one should remember that the heat value of the gas is low compared to that of the other gases that are used for similar purposes, except blast-furnace gas. Natural gas has an approximate average heat value of 1,000 B. t. u. per cubic foot; the heat value of artificial or ordinary city gas is about 650 B. t. u. per cubic foot, whereas the heat value of producer gas ranges from 100 to 275 B. t. u. per cubic foot, according to the method of production. This relatively low heat value must be taken into account in considering the method of application. In spite of its low heat value producer gas is usually cheaper for work requiring relatively large quantities of gas than any other fuel, with the possible exception of natural gas sold at a low price.

Advantages of Producer Gas as Fuel.

In many possible applications of producer gas as a fuel there seems to be little if any gain over direct firing with coal. Opinions differ regarding this point, many claiming that there is always a considerable saving in favour of producer gas. The difference either way is probably small, but other considerations are frequently of such importance as to give producer gas a great advantage. Under conditions requiring uniformity of temperature for continued periods, or variations in temperature at positive intervals, the ease with which a supply of producer gas can be regulated insures results that would be entirely impossible with solid fuel. Producer gas may also be employed with comparative ease as a reducing agent. Under the simple conditions required for boiler heating it is questionable whether any advantage is to be obtained by the use of producer gas, except, possibly, in localities where low-grade fuels are burned. There are many fuels that can be utilized to advantage in the gas producer that can not be employed in direct steam-boiler firing. An incidental advantage which may be important in urban communities is the reduction of smoke that results from the use of the producer. In a large plant there may be considerable advantage in using producer gas in place of coal, because the gas can be so easily piped from the producers to the different parts of a plant. This advantage is particularly marked where it is inconvenient to distribute coal to several boiler installations, and may result in a large financial saving. Some writers on the subject are enthusiastic enough to believe that the manufacture of producer gas by large central plants at the mines, and the distribution of this gas through pipe systems over a broad area, will become general within the next few years. In lime burning it is claimed that greater economy is obtained with producer gas than with coal, and that the output of a plant is considerably increased. The heat produced by the gas is readily controlled, and it is claimed that the flames from burning gas are perfectly adapted to the process. Owing to the absence of ash and clinker a much cleaner and purer product is produced, and the labour required is reported much less than that necessary with solid fuel. Reduction in the repair bill also is claimed, because the life of the kilns is longer and the necessary repairs are fewer than when solid fuel is used. Although producer gas has been satisfactorily used for ore roasting, the development in this direction has been slow, because of a natural hesitancy to adopt new methods. In forge work the substitution of producer gas for oil, illuminating, and natural gas is developing, although special care is necessary regarding the methods of application. Producer gas is economical and does away with the dirt and smoke so prevalent in forge work when coal is used. The substitution of producer gas for coal in cement burning seems to offer an attractive field. Although this substitution has been made in but few instances and has not become general, it is attracting the attention of cement manufacturers. It is claimed that excellent economy is obtained, that a high-grade, uniform clinker is produced, and that the ease of control, the simplicity of the equipment, and the low cost of installation and upkeep make producer gas an ideal substitute for coal. In discussing this question cement manufacturers have expressed the opinion that the application of producer gas to clinker burning presents many of the advantages named, but at the same time they state that, as far as their information goes concerning installations of this process, there has been difficulty in getting as large an output as had previously been obtained with coal.

Gas-Producer Fuels: Fuels Used in the Suction Producer.

The peculiar characteristics of the suction-producer plant practically limit fuels for this type of installation to those containing little or no tar. Hence anthracite and semi-anthracite coal, coke, and charcoal are the principal fuels used. The standard types of suction producer are designed to use these fuels in what is commonly known as pea size. The fuel size usually designated in specifications for such plants is No. 1 pea. Larges sizes can be utilized to good advantage in many cases, but as a rule they are more expensive. If very small coal is to be used, such as rice, barley, or fine screenings, or coke breeze, special producers are usually required. From the standpoint of simplicity of operation, charcoal is an excellent fuel, but its tar content, although small, sometimes causes a little difficulty. However, on account of its expense, charcoal is used in very few plants in the United States. Plants are in operation using this fuel at a cost of $13 a ton, and the owners claim that the fuel cost is considerably below what it would be if illuminating gas were used. Anthracite is the standard fuel

* U.S.A. Dept. of Mines, Paper No. 9.

for suction producers in this country, and under certain conditions it is an excellent fuel. There are a great many power plants in daily use requiring attention not over two or three hours a day, that are as reliable as any steam-engine plant of the same size, and are far more economical. On the other hand, there are many installations that require attention practically all the time, and even then are frequently shut down. The troubles of these plants are often traceable to serious clinkering which may be due to the behaviour of the coal under certain temperature conditions, and may be unavoidable in plants of the ordinary construction. However, in many instances clinkering and a bad condition of the fuel bed are caused by an overload or excessive demands upon the plant. For the most part these overload conditions are undoubtedly due to an overrating of the producer by the manufacturer. This fact has already been recognised by some makers with the result that the guaranteed rating of their plants has been reduced 25 per cent. for the same area of fuel bed. Even with the same working conditions much less difficulty is experienced with one grade of anthracite than with another. It is doubtful, however, whether sufficient study has yet been made to warrant drawing fuel specifications that will guarantee practically no difficulty in producer plants of the suction type. In handling these suction producers it is necessary to keep the grates free from clinker and ash in order to facilitate the action of the engine in producing the necessary draft, and to keep a clean fire a great many operators rake out considerable partly burned coal. It is the custom in many plants to throw this partly burned coal back into the producer. Though this practice is satisfactory in some cases, yet with certain kinds of anthracite it facilitates clinkering. As a result the practice has been abandoned in some installations and the partly burned material, or coke, is saved for use in fireplaces or kitchen ranges. Although attention has been called to some of the difficulties encountered in the use of anthracite coal, it must be understood that these troubles are not general. A large proportion of the several hundred plants in the United States now operating on anthracite are giving excellent satisfaction and little or no trouble. In the United States coke is little used in producer plants of the suction type. It gives much more trouble from clinkering than anthracite and its use necessitates taking a longer time to get the producer into operation in the morning, after a standby overnight. Coke seems to be used much more generally in Europe than in this country. Because of the price of anthracite, some people abroad advocate using a mixture of anthracite and coke. In England the price of coke is about one-half that of anthracite. One manufacturer of a suction plant in very general use in Europe advertises " 20 horsepower-hours for 1 penny " as the cost of power when coke is used in a plant made by him. However, on looking up the particular installation reported to be operated at this low cost, I was informed by the owner that, although coke cost about one-half as much as anthracite, he was compelled to use twice as much of it; consequently the fuel cost was practically the same for both fuels. In actual operation this plant shows an average fuel cost of about 9 horsepower-hours for 1 penny. Under the best conditions it may develop 12 or 14 horsepower-hours for 1 penny, but never 20. Many operators claim that the best results are obtained with coke when it is crushed to walnut size.

MINING MEN AND MATTERS.

Mr. J. M. Calderwood, M.I.M.M., has sailed for South Africa.

* * * *

Mr. Harold Picot, lately assistant manager of the Standard Bank, has established himself as a financial and general agent in the Standard Bank Buildings.

* * * *

Mr. William Ross, lately on the engineering staff of the Corner House, has opened business at 44/46 Africa House, Leadenhall Street, London, E.C., allied with the Vauxhall Ironworks and West Hydraulic Engineering Company.

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The next monthly meeting of members of the Geological Society of South Africa will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday evening, 9th December, 1912, at 8.15 p.m. The following papers will be open for discussion:—" The Occurrence of Sideroplesite and Ankerite in the Cassiterite Lodes at Rooiberg," by David P. McDonald, M.A., B.Sc.; " Note on the Origin of the Iridosmine in the Banket," by R. B. Young, M.A., D.Sc. (Edin.); " Contribution to the Aqueo-Igneous Solution Theory of Rock Magmas," by E. H. L. Schwarz, A.R.C.S.; " A Traverse through the Northern Portion of the Mazoe District of Southern Rhodesia, into Portuguese Territory," by P. A. Wagner, D.Eng., B.Sc., M.E. The following papers will be read:—" Note on a Composite Dyke from the Klipriversberg," by David P. McDonald, M.A., B.Sc.; " Notes on the Vertical and Bedded Veins of Pilgrims Rest," by A. von Dessauer, M.E. (Fri.i/S.).

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School of Mines and Technology diploma examinations, 1912: The following is a list of passed and referred students, the names being given in alphabetical order:—First year.—T. F. Andrews, E. C. Andrews, E. B. Bell, J. C. M. Celliers (referred in pure mathematics), C. J. Dekema, J. K. Exter (referred in pure mathematics), W. D. Galpin, E. W. Harris, B. B. Kark, J. W. Lawrie, J. P. Leslie, T. O. Leslie, M. Leviseur, R. L. W. McNally, G. Parry, E. Samuels, J. S. W. Ward, W. T. Williams. Second year.—Mining and Metallurgy: J. J. Campbell, P. Ellis, P. Friedman, A. S. Hersovitz, O. Lazar (referred in pure mathematics), J. Le Vieux, M. W. Meskin, T. C. A. Meyer, H. Pirow, C. A. Pratt (referred in pure mathematics), A. H. Raine (referred in pure mathematics). Engineering: H. Abrahams, Julius Brown (referred in pure mathematics), W. E. Geerling, R. Jochelson, N. Landau, W. C. Lindemann, A. L. Lipman, L. Miasnik (referred in pure mathematics), H. S. Phillips (referred in pure mathematics), E. P. Reim (referred in pure mathematics), A. Taylor-Smith (referred in pure mathematics), H. Taylor-Smith, J. H. van Belkum (referred in pure mathematics), M. Weinbren. Third year.—Mining and Metallurgy: A. S. Davis, M. W. Duirs, J. Grusd (referred in mining), H. Hammar, L. Hingle, V. G. Holgate (referred in surveying, theory), A. Hosiosky (referred in mining), H. Kahn, G. H. Little, F. D. Long, A. C. Lurie (referred in mining), J. D. Mackenzie, J. Pocock, H. S. Stephens (referred in mining), H. van der Merwe (referred in mining), S. W. van der Merwe, F. B. Wade. Mechanical and Electrical Engineering: L. Beerstecher, S. Block, E. L. Damant, H. G. Issels, A. E. Jensen, H. O. Smith. Civil Engineering: C. J. Chaplin, C. O. Ehrlich (referred in pure mathematics), D. Getz, V. A. Ryder (1911). Fourth year.—Mining: M. O. Baumann, M. Goldberg, G. A. Louw (referred in principles of mining), A. C. Thornton. Metallurgy: J. B. Te Water. Mechanical and Electrical Engineering: F. Ginkewitz. Civil Engineering: M. Schultz.

Ceylon Lydenburg.

The following information is furnished, relative to this company's output for the month of November, 1912:—Tons crushed, 797, yielding 306 fine ozs., valued at £1,294. Estimated profit for month, £507.

" De Transvaler " Christmas Number.

The Christmas number of *De Transvaler*, the Dutch-English weekly, has just been issued, and the proprietors are to be complimented on the excellent production. It is artistically got up, is printed three columns to the page, and the type is clear. Profusely illustrated, the blocks bear on subjects of particular interest to the farming community, and are well brought out. The articles cover a wide range, and are of an instructive nature, dealing with all classes of agricultural subjects.

THE FACTOR OF SAFETY IN MINE ELECTRICAL INSTALLATIONS.—I.*

[By H. H. Clark.]

This paper is not written for the purpose of discouraging the use of electricity in mines. The advantages that have in the past attended the use of electricity in mining work will be even more apparent in the future as operations are extended, power systems consolidated, and generating stations centralised. A discussion of these advantages is unnecessary since they are well known to everyone interested in the subject. The purpose of this paper is to urge that the requirements of safety, as well as those of efficiency, be considered in the installation and operation of electrical mining equipment. The Bureau of Mines publishes this report as one of a series dealing with the use of electricity and the prevention of electrical accidents in mines. A factor of safety may be regarded as representing the ratio of maximum capacity to average duty. Factors of safety are used in the solution of engineering problems in which the conditions cannot be exactly determined in advance, or in which unforeseen happenings may arise to introduce severe stresses. Especially does this apply to problems in which the safeguarding of human life is a consideration. The use of a factor of safety is not a sign of poor engineering, but quite the contrary. Good engineering is based upon recognising conditions, not upon ignoring them. The wise engineer prepares for emergencies instead of assuming that the emergencies will not arise. A factor of safety is good insurance, which is everywhere recognised as a business necessity. The safe operation of electrical mining equipment is an engineering problem that involves the element of human life and that is influenced by conditions and events that cannot always be foreseen. The successful solution of the problem will, therefore, depend largely upon the factor of safety that is considered in the selection, installation, and maintenance of such equipment. In problems in which the factor of safety can be expressed numerically it is seldom made less than three, and often more than thirty. In the present discussion the factor of safety cannot be numerically expressed because neither the capacity for safety nor the duty to be performed in preventing accidents can be measured in the same terms, or even in any terms at all. Therefore, more care, better judgment, and more liberal allowances in design, construction, and installation are required to insure a factor of safety than would be required if its existence were susceptible of mathematical proof. But above all, the absence of a mathematical basis for argument demands great courage of conviction on the part of those advocating increased expenditures in the interest of safety. To facilitate consideration, the problem may be divided into two principal parts: First, an analysis of the conditions to be met; second, a discussion of how to meet them and insure a desirable factor of safety.

CLASSIFICATION OF ACCIDENTS DUE TO ELECTRICITY.

In analysing the relation that the use of electricity in mines bears to the accidents that occur there, the first step is to classify the different ways in which electricity can cause injury, death, or disaster. One characteristic of the electric current with which everybody is familiar is its ability to produce electric shocks. The conditions underground are favourable for their occurrence. There is a well-known fire risk in connection with the use of electrical apparatus. The use of electricity in the vicinity of gas, explosive dust, or explosives, all of which may be found in mines, is attended with danger. There are, therefore, in connection with the use of electricity in mining work three possible dangers—shocks, fires, and explosions.

Electric Shocks.—The conditions under which electricity can start a fire or cause an explosion may be absent from a mine at any or all times, but the chance of receiving an electric shock is always present in any mine where electricity is used and men are at work. Many conditions that are peculiarly favourable to the occurrence of electric shocks are found in mines. Most of these, such as dampness, dust, limited space, and scanty light, are unavoidably associated with mining work. In addition, many underground employees are unfamiliar with electrical apparatus and the proper way to regard it. They may have no responsibility as to its operation or condition, nor any direct interest in it whatever. To some of them electricity may be not even a name or at most only something about which conflicting and confusing statements are made. Yet though the conditions underground favour electric shocks, and though the men may be unfamiliar with electricity, trolley wires and uninsulated feeders are frequently found operating at 250 and 550 volts, the earth being used almost universally as the common return for all direct-current apparatus.

Danger from Ground-Return Circuits.—Under the best of conditions ground-return circuits offer more chances for shock than do completely insulated circuits. The risk is increased where workmen are obliged to stand upon the ground when handling apparatus operating with ground returns. In ground-return systems one side of the generator is connected to the earth, to the track-rail network, and to the return feeders which are in parallel with both. As a result, anyone who stands upon the ground stands upon one side of the electric circuit and only a single contact with the other side of the circuit is necessary to give a shock.

Dangers from Trolley Wires or Bare Conductors.—Trolley wires in mines present a most fruitful source of electric shock. Trolley wires are necessarily bare conductors; they may extend for long distances throughout a mine, and often they must be installed less than a man's height above the track rail which is used as part of the return circuit. A low trolley wire is especially dangerous in places where men must work in making up trips of cars, as at partings where loaded trips are brought out to the foot of a rope-haulage system. Under such circumstances both the loaded and the empty trips are in the parting at the same time, and manipulation is required to make up the loaded trip to be taken out on the rope and to split up the empty trip to be taken in by the various locomotives. It is often desirable to do this work rapidly, and if the trolley wires are lower than a man's head the chance for shock is considerable. Even if the men are familiar with the conditions, their attention, while hurrying to get the trips away from the parting, cannot be constantly on the trolley wire. Trolley-wire feeders and the wires of circuits that operate motors of any description, if exposed to the same extent, offer the same chance of shock as does the trolley wire. Usually such exposure is not necessary, however, as the wires can be strung along the sides of entries in positions less accessible to persons passing. It is also possible to insulate or protect the wires.

Danger from Accidental Charging of Equipment.—Apparatus that has accidentally come in contact with the ungrounded side of an electric circuit is almost as dangerous as the trolley wire. If such apparatus is metallic and is insulated from the earth it offers all the necessary conditions for giving a severe shock, and the danger from such a shock is accentuated by the fact that the victim, being unaware of his proximity to danger, may firmly grasp the charged part. If a shock is received while the victim is grasping the source of current, the results are more likely to be severe than under other conditions, because the grasp is "frozen" in place by the sudden contraction of the muscles, and voluntary release from contact with the circuit is impossible. By connecting to the earth such parts of apparatus as are made of conducting material but are not designed to carry current they cannot become charged with electricity to a potential above that of the earth; consequently a shock cannot be obtained by a person's establishing contact between such parts and the ground.

Shocks from Locomotives and Cars.—There are certain ways in which shocks can be received from locomotives and mine cars. The frames of locomotives are connected to the current-carrying parts of the motors and become charged whenever the motors or headlights are in operation. If the locomotive loses its ground or contact with the rail by reason of oversanding or for any other cause, the full line potential exists between the frame of the locomotive and the rail. Under such circumstances as severe a shock can be obtained from the locomotive frame as from the trolley wire. Since the drawbars of the mine cars are connected to the locomotive frame and are continuous throughout the length of the trip, it follows that, whenever the locomotive loses its contact with the rail, all the drawbars are raised to the potential of the trolley wire unless some of them are in contact with the car axles, axle boxes, or some of their connections.

Relative Danger from Different Voltages.—An electric shock is caused by the passage of current through the human body, the severity of the shock depending upon the amount of current passed. The amount of current depends upon the voltage and the resistance of the circuit, the latter including the resistance of the body, the resistance of its contact with the source of current, and any resistance that may be in series with the body, such as ground resistance. Obviously, therefore, all other factors being equal, the severity of the shock varies with the voltage causing it. There are voltages so small that they are not capable of passing through the body current sufficient to produce a shock. As these voltages are exceeded, a value is reached at which shocks begin to be felt. As the voltage is further increased a value is reached such that shocks may be fatal if the contact is maintained for a sufficiently long time. At still higher voltages the period of contact necessary to cause death becomes shorter. The effect of any shock depends so much upon the particular conditions involved that no specific values of voltage can be assigned to any of the conditions mentioned. The physical makeup of a man greatly affects the outcome. Some men seem practically immune from shocks from potentials as high as 500 volts, while others may be killed by a much lower voltage. As regards the relative danger of a current having a potential of 250 volts and one having a potential of 500 volts, both have been known to cause fatal shocks. Compared with a 250-volt potential, a 550-volt potential not only passes more current through a man's body under a given set of conditions, but it is also more likely to break through insulation to ground. The higher voltage will pass the same current through poorer contacts and greater resistances than will the lower.

(*To be continued.*)

* Paper No. 19, U.S.A. Bureau of Mines.

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Engineering Notes and News.

The Part of Electricity in the Progress of South Africa.

[By JOHN ROBERTS, Borough Electrical Engineer, Durban.]

My outlook during the years I have been engaged in extending the application of electricity in the town of Durban has been limited to the boundaries of this borough. My object has been, first of all, to sell electricity cheaply, and, this accomplished, to extend its application among all the public and private, social and economic, domestic and industrial, activities of a growing town, being convinced that of all the gifts of nature, the mysterious agency of the electric substance seems the most beneficent means which our civilisation has at its command in ameliorating the lot of the human dwellers of this globe. It has been my business to prove that this is no meaningless boast in the municipal sphere, and it will not perhaps be denied that the development of the Durban electricity undertaking during the last fifteen years gives it justification. What has been going on in Durban, however, is just what is happening in every progressive community in all parts of the world from London to Tokio, from Alaska to Tasmania. Electricity is invading every department of human activity, and municipal authorities having come to recognise that the provision of a cheap and abundant electric supply is one of their principal and most important duties, the success attending their efforts in this direction has been great; it has been proved the economic problems have been influenced so profoundly that the development is now more than of local, urban, or municipal rank; it has risen to be a factor of national importance, and I foresee that the day is not far distant when the legislative Governments of all countries will have to take into their own hands the matter of electricity supply and distribution throughout their territory. It was a consideration of this character which determined me to endeavour, in what is, I am afraid, a very inadequate fashion, to give a sketchy and tentative suggestion of the part electricity will play in the national life of this country. It has already begun to bring itself before the public eye by the part it is playing in the industry which, it must be confessed, is still the most important South Africa can boast, the winning of gold, and I hope to show that it is likely some day to benefit just as favourably the industry which we all hope will one day occupy the premier position—I mean, of course, that of agriculture.—Abstract from article in *Natal Mercury*.

New Patents.

573 Alexander McNamara.—Improvements in and in connection with rotary drills.
574 Alexander McNamara.—Improvements in means for the application or utilisation of animal power.
575 William Charles Stephens.—Improvements in or connected with hose couplers or unions.
576 Abraham Price and William Pryse.—Improvements in and relating to shot firing by powder fuses and the like.
577 Albert Eugene Cook and Thomas van Tuyl.—Improvements in tractors.
578 Andrew Baillie.—An improved spraying device for allaying dust in mines and the like.
579 Pieter August Smorenburg and Fergus Ferguson.—A new or improved mixture for exterminating vermin.
580 Izaak Jacob Haarhoff.—Dust destroyer or preventer.
581 David Stephanus de Plooy.—The improved wire strainer.
582. Percy Henry Shailer.—Improvements in resilient vehicle wheels.
583. John McEntyre.—Improved appliances for coupling and uncoupling railway trucks.
584. Cecil Murray.—An oscillating pen.
585. Joseph Alexander Morcom and William John Isaac Morcom.—Improvements in danger signalling devices for winding machinery.
586. Henry Edward Douglas Drake.—An improved ox yoke.
587. Charles Mascart.—Improvements relating to taximeters.
588. Stewart and Lloyds, Limited, John Graham Stewart.—Improvements in welded joints for iron and steel pipes and tubes.
589. Charles Butters.—Improvements in the treatment of refractory gold and silver ores.
590. Charles Butters.—Improvements in apparatus for filtering slimes.

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ROAD MOTOR TRANSPORT IN SOUTH AFRICA.

An Interesting Railway Development—Possibilities in Country Districts.

An interesting portion of the report of the General Manager of Railways, just issued, is that dealing with road motor transport. The problem is to devise a system of transport which will enable some of the undeveloped country districts to be placed in cheap and regular communication with the existing main or branch lines, and which will also be self-supporting from the commencement. Any practical solution of the difficulty (remarks the report) would be eagerly welcomed in many countries, and especially in South Africa, where the conditions are often such as to render the ordinary branch railway an unpayable proposition for a more or less lengthy period. The remarkable progress that has taken place of recent years in the development of road transport by means of self-propelled vehicles warrants the view that in this direction the solution of the problem may be found to lie, and the outline of a scheme for the establishment of a motor road transport service has recently been considered by the Administration. Briefly, the proposal is that for the development of districts where the traffic is not likely to be very heavy a system of road transport should be instituted, to be operated by and in conjunction with the railways, the building of railway lines in the future to be limited to lines of standard gauge as far as possible, and only to be undertaken when and where the traffic is heavy enough to justify their construction. The outstanding advantages urged in favour of this policy are, firstly, that the cost involved in building, say, one hundred miles of branch lines would be sufficient to construct and equip with the necessary motor transport two or three times that number of miles of main roads; secondly, that these roads, which would be gradually extended and linked up in all directions, would in themselves form a most valuable national asset, even after the road transport services had been replaced by railways; and thirdly, that when the traffic in any district developed sufficiently to warrant the construction of a railway, the road transport vehicles and other plant could be transferred to another district. The roads to be constructed under this scheme by the local road authorities should be first-class metalled roads of a standard width of 18 feet 6 inches, well drained, and waterproofed if possible. All rivers and streams would require to be bridged so as to ensure regularity of service. Depôts or stopping places would be established at regular intervals, and where necessary, goods sheds of a design suited to the traffic to be dealt with. The transport depôts, where stores, fuel, etc., would be kept, and where running repairs would be effected, would naturally be established at the points of communication with the railway lines. Two types of motor vehicles only would be necessary—one for passengers, parcels, and mails, and one for goods traffic. Speeds of from twelve to twenty miles should be possible for the passenger service, and from six to fifteen miles per hour for the goods service. A telephone would be run alongside the road, and the whole service would be conducted, as far as possible, in accordance with railway methods. Rough estimates have been prepared of the cost of operating such a service compared with some of the existing branch lines, and while the information available on which to base the calculations of working costs is necessarily very limited, the whole scheme appears to be sufficiently practical to merit further consideration with a view to its being tried as soon as a suitable opportunity presents itself. I propose to recommend such a service between Bot River, on the Caledon line, and Hermanus and Mossel River, a distance of about nineteen miles. It is hardly necessary to state that road-motor transport, both for passengers and goods, as an adjunct to the railway transport system, particularly in the opening up and development of country districts, is no longer in the experimental stage. As far back as 1903 the North-Eastern Railway, which was among the earliest British railways to realise the possibilities of this system of transport, first commenced making experiments with a road-motor service. In that year, it is stated, the directors had under consideration the construction of a light railway at Beverley, which would serve the Bransburton, Beefort, and Holderness districts. The possibility of such a line paying was freely debated, and it was ultimately decided to experiment with motor vehicles in order to ascertain the amount of traffic which could reasonably be expected to accrue in the district. This trial was so successful that it was soon afterwards decided to put a permanent road-motor service into operation. It was felt that, while there was not sufficient traffic to warrant the construction of a light railway, there was ample justification for the carrying out of road-motor transport experiments in the district. The success which has attendad this and subsequent experiments is sufficiently evidenced by the fact that the North-Eastern Railway Company has now a fleet of 68 passenger and goods road-motor vehicles constantly engaged in road-transport services at different points on its system. That the value of this method of developing a district is fully established is beyond doubt, and it will be of interest to quote—from the same source—the following expression of opinion by Mr. Vincent L. Raven, the chief mechanical engineer of the North-Eastern Railway, who has been intimately associated with the development of the road-motor transport service from its commencement. Speaking of the development of country districts by this means, he says: "It is a matter in which most careful organisation must play a part. . . . . The farming community must be educated in such matters with considerable patience, and they must be persuaded of the advantage of establishing small roadside collecting places, or exchange posts we might call them, for goods and parcels. They must also be convinced, as we have been able to persuade them in certain instances, that it is to their advantage and the advantage of their districts that both outward and inward loads should be provided for the carrier wherever possible. The motor vehicles can then, with success, be employed to travel over regular routes, taking up at the roadside depôts, and so efficiently connecting large farming areas with the more or less distant railway stations. The principal point is this, that even if there is not a lot of money in such experiments for the railway companies, the effect of such services, if they be properly backed by the residents whom it is intended to benefit, is that the whole district becomes 'bettered.'"

The late Mr. William Bettel.

The chemical world of Johannesburg, and indeed of South Africa generally, is to-day considerably poorer by the death of Mr. William Bettel. Mr. Bettel's work in this country is well known, and it may be of interest to give a short summary of his technical training and career before his arrival on the Rand. From 1869 to 1872 he was a pupil-assistant in the laboratory of Messrs. B. Samuelson & Co., Newport Iron Smelting Works, Middlesbrough-on-Tees. He attended the summer courses at the Royal College of Science, London, under the late Sir Edward Frankland during the years 1872 to 1873. In 1873, at the early age of 21, he was appointed Public Analyst to the Borough of Middlesbrough, which appointment was confirmed the following year by the Local Government Board. The years 1874 and 1875 saw Mr. Bettel appointed Gas Examiner to the Corporation of Middlesbrough and Water Examiner to several urban and rural sanitary authorities. From 1873 to 1879 he practised all branches of his profession, and gained an invaluable experience. Depression in the iron trade and excessive competition caused him to leave Middlesbrough in 1879, and he went to Worcester where for two years he was associated with Dr. Horace Sweete, who was then public analyst for eight districts. From 1881 to 1882 he was assistant to Edward Riley, F.I.C., analytical and consulting chemist and metallurgist, London. He returned north in 1882, and was until 1885 metallurgist and chief chemist to the Sheffield Smelting Co., and from 1885 to 1889 he occupied a similar position in a similar works in Birmingham. From 1889 to 1892 he was engaged as works manager, metallurgist and chemist to the Morfa Copper Works and Williams Copper Syndicate, Ltd., Swansea. In 1892 he came to the Rand, and was first employed as chemist to the Robinson G.M. Co. Mr. Bettel was one of the founders of the Chemical, Metallurgical and Mining Society of South Africa, and was the first president in 1894-5. The proceedings up to the time of the war contain a large number of contributions from his pen, and many of his methods have become classic. Of late years he had been a frequent contributor to the *South African Mining Journal*, and occasionally to the *Chemical News*, London. He was a member of the recently-formed South African Association of Analytical Chemists, and until recently acted as an alternate on the Council.

New Heriot G.M. Co.

The following are the returns for last month's operations at the New Heriot;—Tons milled, 11,500; ounces recovered, 4,962; profit, £8,450.

INVESTORS' DIARY.

The following company meetings have been announced:—

Dec. 11.—Van Ryn G.M.
Dec. 20.—Breyten Collieries; Elandsfontein Estate Co.
Jan. 24.—Witbank Colliery.

THE WEEK IN THE SHAREMARKET.

Still Stagnant—Improving Outlook—Peace Prospects.

Though the prospects of activity have greatly improved by reason of the cessation of hostilities, the tension has not yet been entirely relieved. Until the Austro-Servian differences are settled, the future is uncertain, and the next few weeks are fraught with great significance. At least, we are in for a period of doubt and conferences, and the latter are notoriously bad for markets. Possibly, however, the dividend declarations of next week and the brightening European outlook may mean a good Christmas market, a consummation devoutly to be desired.

	Friday, 29th	Sat., 30th	Monday, 2nd.	Tuesday, 3rd.	Wed., 4th.	Thurs 5th.
African Farms	15 9	15 6	15 9	15 9B	16 0	15 9B
Aurora West	10 0					
Apex Mines		24 0B		24 6B	24 6B	24 6B
Bantjes Consolidated	24 0B	24 0B	24 3B	25 0	24 6B	24 9
Benonis	4 1	4 0B	4 0B	4 1B	4 0B	4 0B
Bushveld Tins	0 9B	0 10B	0 9B	0 11	0 10B	0 10B
Brakpan Mines	81 0	80 6B	80 6B	80 6B	81 0B	81 0B
Blaauwbosch			27 0B	28 0B	30 3	
British S.A.	25 0B	25 0B	25 0B	25 6B		25 0B
Breyten Collieries	31 0B	31 6B	31 0B	31 6	31 0B	31 6B
City and Suburban		47 6B	47 0B	47 6B	47 6B	47 0B
City Deeps	61 0B		61 3	61 6B	61 3B	62 0
Cloverfield Mines	6 2	6 2	6 1B	6 3B	6 3B	6 3B
Cons. Langlaagtes	28 6B	28 6B	28 9B	29 3B	29 3B	29 0B
Cons. Main Reefs	19 9	19 6	19 6	19 6B	19 6B	19 6B
Coronation Freeholds	0 7B	0 6B	0 6B	0 6B	0 6B	
Cons. Mine Selections			15 0B		13 6B	
Clydesdales		8 6B			8 6B	
Concrete Cons.	7 0B	7 0B				
Coronation Colls.		15 0B	16 0B	15 0B	15 0B	15 0B
Cinderella Cons.			20 0			
East Rand Cent.	11 6B	11 9	11 3B	11 6B	11 6B	11 6B
East Rand Coals	2 4B	2 4B	2 4B	2 5B	2 6	2 5B
East Rand Deeps	2 6B	2 8B	2 6B	2 8B	2 9B	2 9B
East Rand Props.	55 0B		56 0B	56 0B	53 0B	57 0B
East Rand Deb.	£92	£93		£92	£92	£92
Eastern Gold Mines	1 10B	2 0B	1 10B	1 11B	2 0B	1 11B
Frank Smith Diam.	8 6B	8 6	8 6B	8 6	8 6B	8 6B
Govt. Areas	21 0	20 9B	21 0B	21 3B	21 3B	21 3B
Glencoe (Natal) Colls.	7 0B	7 0B	7 3B	7 3B		7 3B
Geduld Props.	23 6B		23 0B	24 0		25 0B
Hex Rivers	2 0B	2 0B	2 0B	2 6B	2 6B	2 3B
Jupiters	12 3B	12 3B	12 9B	12 9B	13 0	12 9B
Klerksdorp Props.	2 10B	2 11B	2 10B	3 0B	3 1B	3 0B
Knight Centrals	12 3B	12 3B	12 9	12 9	12 9	12 9B
Luipaardsvlei Estates	10 0B		10 3B	10 0B	10 0B	10 0B
Lace Props.		3 9B	3 10B	4 0B	4 0B	4 0B
Lydenburg Gold Farms	2 4B	2 4B	2 5B	2 5B	2 4B	2 4B
Main Reef Wests	18 9B	19 0B	19 6B	19 6B	20 0	19 6B
Modder B's	67 0B	66 6B	67 3B		68 0B	
Middelvlei Estates	1 4B	1 5B	1 5B	1 5B	1 5B	1 4B
Modder Deeps	39 6B	39 6B	40 0	40 6B	40 0B	
Meyer & Charltons						
New Eras	7 6B	7 9B	7 9B	8 3	8 0	7 9
New Kleinfonteins	24 6B	24 6B	25 0	24 9B	25 0B	25 9B
New Rietfonteins		8 6B	8 9B	8 6B	8 6B	8 6B
New Boksburgs	1 6B				1 0B	1 1B
New Geduld Deeps	2 6B	2 6B	2 9	2 7B	2 7B	2 6B
New Eland Diam.		24 0B	25 0	24 6B		
New Unifieds	16 0B	16 0B	16 0B	16 0B	16 0B	16 0B
Orange Diamonds	1 6B	1 6B	1 6B	1 3B	1 3B	1 3B
Pretoria Cement Co.	54 0B	54 0B	54 0B	52 6B	53 6B	52 0B
Princess	9 0B	9 0B	9 3B	9 3B		
Rand Collieries	5 6B		6 6B	6 6B		7 0B
Rand Nucleus	2 9B	2 9B	2 9B	2 10B	2 10B	2 10B
Randfontein Estates	31 6B	31 6	32 0	31 9B	32 3	31 6B
Randfontein Deeps				5 9B		5 6B
Rooiberg Minerals	30 9B	30 6B	30 6B	30 9B	30 0B	30 0B
Rand Klips	6 1	6 0B	6 1	6 0B	6 0	5 6

B Buyers. S Sellers.

	Friday, 29th.	Sat. 30th	Monday, 2nd	Tuesday, 3rd	Wed, 4th.	Thurs 5th.
Ryan Nigels			3 0B	3 6B	3 6B	3 6B
Robinson Deeps	44 3B					
Simmer Deeps	2 6A	2 8B	2 9		2 6B	2 6B
South African Lands	4 3B	4 2B	4 3	4 6	4 4B	4 5B
Sub Nigels	9 6B	9 8B	10 0	9 9B	10 0B	10 0B
Springs Mines				16 6B	16 6B	16 9
Shebas	5 6S	5 6S		5 6S	5 6S	5 3S
S. A. Breweries	41 0S	41 0S	41 0S	40 0S		
Trans. G.M. Estates	50 6B	50 0B	50 0B	50 0B	51 0B	51 0
Trans. Coal Trusts	45 0B	45 0B	46 6	46 6B	47 0B	47 0B
Temple Tins	0 8B	0 8B	0 8B			0 8B
Tudors		1 0B	1 0B		2 0S	
Van Ryn Deeps	18 9	18 6B	18 6	18 9B	19 0	19 0
Village Deeps	42 0B	42 0B	42 6B	43 0B	42 6B	
Vogel. Cons. Deeps	1 1B		1 3B	1 3B	1 3B	1 3B
Voorspoed Diamonds	11 0B	11 6B		11 9B		
Witwatersrands	59 0B	59 6B	60 0B			
Wolhuters	17 6B	17 6B	17 9B	17 9B	17 9B	17 6B
Wit. Deeps	54 0B	53 0B	53 9B	54 0B	54 0B	54 0B
Witbank Collieries		45 0B	45 0B	45 0B		
Worcesters	28 9B	28 9B				
West Rand Est.	3 6A	3 3B	3 3B		3 3B	3 6B
West Rand Con.			15 3B		15 9B	
Zaaiplaats	24 0	24 0	24 0	24 0	24 0	24 0

B Buyers. S Sellers.

The Albu Group.

The following information regarding last month's operations of the producing mines of the Albu group is published:

Company.	Stamps.	Tube Mills.	Tons Crushed.	Total Cost.
Aurora West	80	—	13,703	£13,935
Cinderella Consolidated	80	3	18,030	22,953
Meyer and Charlton	75	2	14,052	12,911
New Goch	120	4	27,796	22,518
Roodepoort United	55	4	31,078	28,568
Van Ryn	135	6	38,300	30,796
West Rand Consolidated	100	4	28,820	34,519
	645	23	171,779	£166,200

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	20/ 4·0	£18,235	£4,300
Cinderella Consolidated	25/ 5·5	25,728	2,775
Meyer and Charlton	18/ 4·5	31,111	18,201
New Goch	16/ 2·4	26,891	4,373
Roodepoort United	18/ 4·6	30,214	1,646
Van Ryn	16/ 0·9	54,829	24,033
West Rand Consolidated	23/11·4	42,993	8,474
		£230,001	£63,802

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Finance, Commerce, and Industries.

Union Ports in 1911.

The capital expenditure of the ports and harbours of the Union during last year was £66,067, bringing the total expenditure at December, 1911, up to £11,504,978, made up as follows:—Table Bay, £3,890,127; Mossel Bay, £126,963; Algoa Bay, £1,512,499; Buffalo Harbour, £1,542,164; Durban, £4,005,130; Port Alfred, £323,297; Port St. John's, £18,076; Port Shepstone, £85,745; Port Nolloth, £101; Hermanus, £232; Marine Surveys, £624.

* * * *

Fraser & Chalmers, Limited.

The report and audited statement of accounts of Fraser & Chalmers, Ltd., for the year ended June 30, 1912, shows a net profit of £7,378, after payment of debenture interest and after making the usual provision for depreciation, to which must be added £84,132, being the credit balance brought forward from the preceding year, making a total of £91,511 to the credit of profit and loss account. Out of this sum the directors have paid the full preference dividend for the year of £4,725, and an interim ordinary dividend of 3 per cent., absorbing £11,340, leaving a balance of £75,446 4s. 4d. to be carried forward. The directors regret the serious decrease in the net profits of the undertaking for the period covered by the accounts, as compared with the year ended June 30, 1911, which showed a profit of £31,892 8s. This difference is due to a decrease in the sales of mining machinery, both in South Africa and in England, to severe competition, with its inevitable reduction in the selling price of the company's products, and to the necessity of incurring heavy preliminary and other expenditure in the manufacture and introduction of other lines of machinery now called for by users both at home and abroad. To meet this demand and keep the company abreast of the times, the directors have secured valuable patent and manufacturing rights for new types of machinery, and they anticipate that the outlay involved in their introduction will add to the profits of the undertaking in the near future. Owing to the reduced profits, the directors do not recommend the payment of any further dividend for the year. The directors record with profound regret the death of Sir Julius Wernher, the chairman of the company, who rendered conspicuous service to the company. He was a wise and able administrator, and at all times took a keen and personal interest in the company's affairs. The new chairman is Mr. Robert English.

* * * *

Branch Railways.

A statement is published in the report of the General Manager of Railways for 1911 showing the results of working of each section, division, and system of the South African Railways during the year under review. The systems are grouped under eight divisions, and the results in each division may be stated as follows, the returns showing the net profit or loss, after payment of full working expenses and interest on capital: Western Division—loss, £84,617; Northern Division—profit, £37,071; Midland Division—profit, £1,918; Eastern Division—loss, £34,344; Free State Division—profit, £285,591; Johannesburg Division—profit, £1,279,637; Pretoria Division—profit, £524,680; Natal Division—profit, £464,340. The lines which have chiefly contributed to the debit balance, where it exists, are such branch lines as Rosmead Junction-Graaff Reinet line, which shows, it is true, a profit for the year over working expenses of £4,470, but fails to meet interest charges on capital by £60,300. The Kingwilliamstown-Cookhouse line is similarly in default to the tune of £32,475; the Klipplaat-Oudtshoorn line shows a debit balance of £27,819; and the Port Elizabeth-Avontuur line is also in default to very nearly as large an amount. It is rather remarkable that in the Western Division the only lines which show a net profit after meeting interest charges are the Salt River-Wynberg section; the Eerste River-Sir Lowry Pass; the Somerset Strand line, and the Kraaifontein-Malmesbury branch line. In the Northern, Eastern, and Midland divisions none of the branch lines show a net profit. In the Free State division there is a long category of branch line deficits, and the same is true of the Pretoria and Natal divisions. In the Johannesburg division substantial profits are shown on most of the sections.

* * * *

A Railway Problem.

According to the General Manager of the South African Railways, the Administration suffers a loss of £20,000 a year through broken and damaged buffers, and there is urgent need for the introduction of an improved automatic coupler for goods stock. In his annual report, he makes the following comments on this subject: " The combined draw and buffer gear in use on these railways for goods stock is what is known as the ' pin and link ' type. The increase in the weight of trains during the last few years has caused a good deal of damage, and the time has now arrived when a stronger type is necessary. When the change is made, the provision of a satisfactory automatic coupling arrangement is very desirable. The breakage of buffers, according to recent returns, amounts to over 4,400 per annum, and the parting of trains due to breakage of links or pins to over 1,500 per annum. The heaviest work is done on Divisions 6 and 7 (Natal and Southern Transvaal), which between them account for 94 per cent. of the broken buffers and nearly 80 per cent of the parted couplings. The passenger stock is being provided with the ' Master Car Builders ' type of automatic buffer coupler with satisfactory results, and the provision of a suitable coupler for the goods stock is a much more complicated matter, and it will probably be necessary to appoint a small committee to make tests and submit a definite report in regard to: (a) The best type of automatic buffer coupler to meet South African conditions and probable cost of installation. (b) How the intermediate period before all stock is equipped is to be dealt with. A large number of suggestions for improvements in the existing types and also for entirely new types of couplers have been submitted to the Administration for consideration, and a few of the more promising suggestions have had a practical trial, but up to the present none have fulfilled the requirements. When it is remembered that broken buffers cost the Administration over £20,000 a year, the need for an improved coupling gear is apparent."

CATALOGUES, ETC., RECEIVED.

W. Sisson and Co., Gloucester.—This old-established firm send a descriptive catalogue of their enclosed and open-fronted single-crank engines for ship and other electric lighting sets, small factories, fans, pumps, blowers, etc., and of other engines and plant which are a speciality of the of the firm. The " Sisson " Patent Enclosed Compound Engine, built up to almost any size, has a high reputation for oil consumption, maintenance and general excellence.

Mavor and Coulson, Ltd., Glasgow.—A feature of this firm's productions are the Dandy Ventilators for headings, drifts, cross-cuts, etc. They provide a simple, inexpensive, and convenient means of inducing an air current where compressed air is available.

Lassen and Hjort.—The Lasson and Hjort Water Softener, which is known all over the world, and has been adopted by such firms as Babcock and Wilcox, Armstrong, Whitworth and Co., J. and P. Coats, Siemens Bros., and other noted steam users, has attracted considerable attention, we learn, at the Engineering Exhibition at Olympia, London.

Johannesburg Motor Garages and Suppliers of Motor Cars, Accessories, etc.

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SEND YOUR TYRES FOR REPAIR OR RETREADING
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of over 2,500 Securities quoted on the London Stock Exchange are given in the

"INVESTOR'S BLUE BOOK," 1912 EDITION

Bankers, Brokers and Investors say that it is indispensable to them. It is a book which gives you the **Essential Facts** and **expresses opinions.** It is not a mass of colourless information of no practical value. It contains more real information regarding the securities with which it deals than any other book of its kind ever published. Its facts and figures have been **Officially Checked**; its opinions are unprejudiced and **Absolutely Independent.** It answers many of the questions you are from time to time asking in regard to financial affairs. It is published at 3s. 6d. by the "Investor's Chronicle," Tower Chambers, London Wall, London, England.

Explanatory Pamphlet on Application.

First and Fastest "Hill Climbs" 1910.

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Sole Agents:
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P.O. Box 1940.

Automobile Notes.

Wire v. Wooden Wheels.

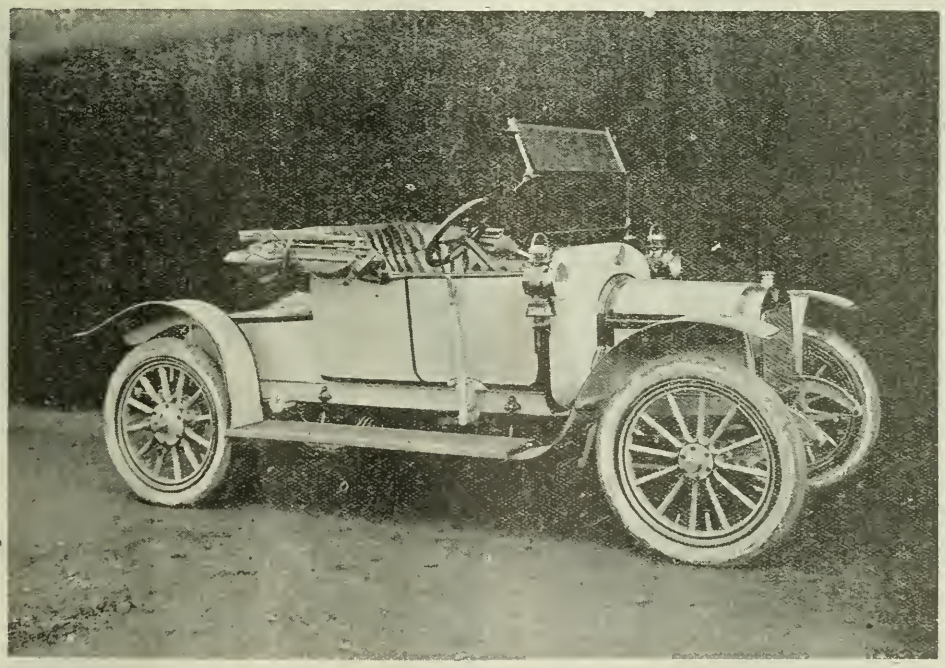
The question is often asked: Do wire wheels increase the mileage of tyres? To which one must answer in the affirmative. It is pointed out that in the case of the wire wheels, the heat, which, in the natural way, is created in the tyres of an automobile, is rapidly conducted into all parts of the metal—it being a powerful conductor of heat—and thence into the air. On the other hand, wood—as a recognised non-conductor—holds the heat in the tyre, and in turn militates against its life. Manufacturers of wire wheels are confident in their assertion that much unnecessary tyre wear is due to the absence of these fitments, and hold that the rigidity of the wooden wheel forces the fabric of the tyre unnecessarily, a condition which investigation has proved to be correct and generally admitted by those who have no trade interests to serve. The popularity of the wire wheel for use on Colonial cars undoubtedly lies in its shock-absorbing qualities, so essential a feature in a country where imperfect road systems are more the rule than the exception, and the fact that the leading manufacturers standardise wire wheels on their Colonial models, and particularly in respect to those for use in South Africa, largely endorses this view.

Farm Tractors.

The agricultural problem in South Africa will one day be solved by the adoption of the farm tractor, and the trade in these machines, when once developed, will be far more extensive than the traffic in other branches of the motor industry, for the reason, as one writer remarks, that this particular trade will not deal with luxuries but with absolute necessities. In a series of extensive practical tests, to which farm petrol tractors were recently subjected, highly satisfactory results were obtained, under the most severe conditions, and much useful knowledge gained. The contest pointed conclusively to the increasing superiority and popularity of the internal combustion engine, as a source of farm power, and indicated, in similarly marked fashion, the decline of the steam machines. Manufacturers maintain that tractors for hauling field implements must be of reasonably light weight, owing to being called upon to traverse much soft ground, and that their usefulness is limited largely to the firmness of the ground of operation. Recognising, therefore, the remarkable absence of soft ground in South Africa, generally speaking, a sacrifice in regard to lightness need not be made in the construction of Colonial tractors. A machine, however, must be sufficiently strong and at the same time simple enough to require very little unskilled attention. Difficulties, when present, in the task of designing a really practical motor farm tractor, are no greater than those which have had to be overcome in bringing to the

10/14 AUSTIN TWO-SEATER.

AS POWERFUL AS MANY SO-CALLED 15 H.P. CARS.



Particulars from **GILL'S GARAGE, Eloff Street, JOHANNESBURG.**

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present perfection the familiar automobile. Cheapness of operation will characterise the agricultural motor, on account of the low cost of the liquid fuel used.

Self-Starters.

To be able to spin one's motor, from the natural driving position, with the effort of a simple pressure of the foot, is one of the gratifying results attending the self-starter. The simplicity of the operation certainly recommends this device to many motorists whose hand-cranking experiences have not always been satisfactory. The self-starter has safely negotiated the experimental stage, and although objection may, at the moment, be raised to its general adoption, no amount of opposition will prevent universal recognition among users, once a claim for an absolute dependability is established. Several of these devices, in use to-day, are wonderfully simple and effective, and can be attached without changing any part of the car's construction, while offering all the advantages of hand-cranking, without the danger and inconvenience so often associated with that operation.

The 1913 "Austin."

This distinctive car, which has been characterised from its inception by excellence of design, workmanship and finish still makes an irresistibe appeal to the experienced motorist. For many years it has conformed, in every way, to the best engineering principles, and the 1913 models are acknowledged among the finest cars on the British market. The Austin Company do not favour the Monobloc system, and put forward very strong arguments in support of their departure from the more popular form of construction, which, however, cannot be mentioned here; suffice it to say that the solidity of construction in the system of single cylinder castings is evident in the exceptionally smooth and quiet running of the Austin engine. This feature is retained in a remarkable manner, even after prolonged use, and for this desirable ability the manufacturers attribute, in a large measure, the excellence of materials employed. At the recent Olympia Show, a representative range of models, built by the firm for Colonial use, was on exhibit, and the export trade in these machines has reached considerable dimensions. The coming season is expected to show an increase on the current year of some one thousand vehicles.

£1000

will be paid to anyone showing us a Nut that can get loose through vibration where the "FASTNUT" Washer is properly applied

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Will take your Motor Car anywhere under any conditions. They give full tractive grip on all surfaces—veldt, drift, sand, mud, grass or rock. Cannot injure tyres. Carry Parsons Chains ON the Car—when conditions call for their use, the chains can be attached in two minutes, and afterwards removed in one.

Thousands are in constant use in South America and Australia, for securing a grip on soft ground. 408,694 were sold in the United States of America alone during the 12 months ending Dec. 31st, 1911.

PRICES—For Tyres, 760 mm. or under, £3 per pair.
" " 800 mm. to 920 mm., £4 per pair.
" " Larger Sizes, £4 10s. per pair.

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PARSONS NON-SKID CO., LTD.

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QUICKER, BETTER PUNCTURE REPAIRS.

You avoid all the mess, bother and wasted time of the old-fashioned patch and solution method, and make easier, better, more permanent repairs, by using

PARSONS RAPID REPAIR KIT.

The Parsons way is simplicity itself—punch the hole clean—stretch—insert plug—compress—and the repair is made. It can never leak, wear out or come loose.

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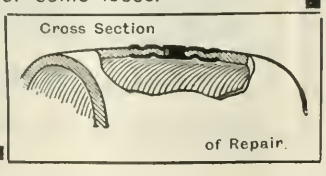

THE BIG
MOTOR CARS HAVE
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TYRES
(Three Rib Tread),
"Specially made for the Tropics."

MOST of the big cars, which are hardest on tyres, are fitted with Continental Tyres. The Manufacturers and Selling Agents know that no other tyre will stand the hard usage and climatic effect in South Africa like Continental Tyres.

When Continental Tyres are proving best for the larger cars, they will surely prove best for your car.

Try a set and prove it for yourself.

"Cost a little more to buy, cost a lot less to use."

"Here and There."

The rapid strides of the South African motor cycle industry, in the year drawing to a close, have been little short of phenomenal, and local agents for the leading types of machines have been quite unable to meet the demand. The present day cycle affords the maximum of ease and comfort, with a minimum of cost in operation, while the three essential qualities of speed, reliability and power, contribute to the popularity in which it is held, and make it indispensable in many modern pursuits. The side car is also to be seen everywhere, and a large amount of business is being done by the several South African firms specialising in this utilitarian attachment.

* * * *

The disastrous fire recently reported from Pretoria, involving the loss of a garage, with its valuable cars and contents, has once again turned serious attention to the causes of these conflagrations and the precautions necessary to their avoidance. Faulty petrol pipes are a frequent source of fire, resulting in partial or complete destruction of cars. Unions are often at fault, and should be examined carefully from time to time for leakages and dealt with at once. Disaster on occasion has been traced to improper joints, which work loose from vibration in many instances. Inconvenient positions in regard to taps are to be deprecated, as the difficulty of shutting off petrol, should a fire occur, is often impossible owing to the tap being placed in an awkward position. The precaution of draining the undershield is not observed in a deserving manner, and the accumulation of petrol, oil and grease has often enabled a fire to make dangerous headway, which might have been confined to certain limits, were periodical cleaning of the shield attempted.

* * * *

The delay sometimes experienced by the car owner when minor repairs to cars are being effected locally, in the end, reflects adversely on the garage proprietors, but is at least productive of some good by arousing the owner to the importance of possessing some mechanical knowledge of his machine, and being in a position to discover and remedy simple faults, for which disproportionate charges are often made. The evil, fortunately, does not exist to a great extent, but the repairer who indulges in the practice is invariably given a wide berth nowadays.

* * * *

Co-operative delivery schemes have been found workable in several American cities, where merchants have decided upon this system, as opposed to separate delivery vans. The idea, at first sight seems practicable enough: traders being relieved of the necessity of sending out vans one-third, or one-half, full, or consigning separate articles considerable distances. On the other hand, delivery schemes of this nature are condemned on the score that they give occasion for jealousies among merchants, who are adverse to the fact that incidentally a leakage of much knowledge of their business affairs, to the other participants in the scheme, is entailed by co-operative methods.

* * * *

The "science notes" in a local magazine commenting upon "Life and Rubber," deals with synthetic rubber, which, it says, must be carefully distinguished from rubber substitutes—the former being really rubber, the latter imitations possessing some properties of the real article. Scientists, however, have proclaimed the possibility of making artificial rubber at a very low cost on a commercial scale, an announcement which has caused a considerable flutter in scientific circles. The difficulty of detecting artificial rubber is unfortunately very great, there being no assay test for this commodity, and much that is ostensibly rubber is being marketed to-day, with unsatisfactory results, a fact to which many motorists can amply testify.

TO TRIBUTORS.

BUCKS REEF GOLD MINE,
RHODESIA.

Applications are invited for leasing the Bucks Reef Gold Mine, Colleen Bawn, Rhodesia, on tribute from 1st January, 1913.

Applications giving terms proposed should be addressed to

The Secretary,
Bucks Reef Gold Mines, Ltd.,
P.O. Box 506,
Johannesburg. Transvaal.

New Vaal River Diamonds.

The report, together with the audited balance sheet and profit and loss account, for the year ending 30th June, 1912, of the New Vaal River Diamond and Exploration Company shows:—Accounts: The gross revenue for the period under review amounts to £18,094 3s. 4d.; our gross expenditure for the same period amounts to £7,560 12s. 2d., leaving a profit on the year's working, before allowing for depreciation, of £10,533 11s. 2d. The balance to the credit of profit and loss account, £21,759 13s. 10d. (as against £17,325 17s. 9d. last year) is carried forward. Digging operations: The company has continued the policy of vigorously prospecting, and two new areas are now being worked by estate diggers with highly satisfactory results. Rhodesian gold properties: A considerable amount of development work has been carried out during the year on the claims purchased by the company, and one shaft has been sunk to a depth of 300 feet. From the surface to a depth of 175 feet, good values were met with, but below this level the values declined. Work has been suspended on the claims for the present, but it is proposed at a future period to consider the question of boring with a view to ascertaining whether the superior values exist in the deeper levels. A large amount of prospecting was done on the 230 claims held by us under option, and good values have been met with at several points, though none of these shafts have been carried down below the 100 foot level. We have relinquished our options over some of the claims, whilst over others the option has been renewed until 31st August, 1913. Work has also been suspended on these claims. Depreciation: In pursuance of the policy hitherto adopted, your directors recommend writing a sum of £4,599 15s. 1d. off the assets of the company.

The report of the joint managing directors was as follows:—We herewith beg to submit to you our report on the working of the estate for the year ending 30th June, 1912. The output of diamonds for the year is 17,918¾ carats, and these realised £106,681 17s. 6d., or an average price of 119/1 per carat. The value of the output as well as the average price per carat form a record since the inception of the company. All the existing buildings in the township of Sydney belonging to the company are occupied, and are kept in a thorough state of preservation. The efficiency of all plant and machinery has been maintained during the year.

Knights Deep.

The following is a summary of operations of the company for the quarter ended 31st October, 1912:—Mine: Number of feet driven, sunk and risen, 723; ore crushed, 207,791 tons; ore developed, estimated, *136,257 tons; excess crushed during period, 71,534 tons. Mill: During August, 1912, an average of 250 stamps ran 23 days, 22 hrs., 13 mins.; during September, 1912, an average of 250 stamps ran 28 days, 4 hrs., 45 mins.; during October, 1912, an average of 400 stamps ran 28 days, 19 hrs., 15 mins.; total running time, 80 days, 22 hrs., 13 mins. Tons crushed, 207,791; tons crushed per stamp per 24 hours, average 8.463 tons: yield in fine gold, 17,607.101 ozs.: yield per ton crushed in fine gold, 1.694 dwts. Tube Mills: Yield in fine gold, 8,925.929 ozs.; yield per ton crushed in fine gold, .859 dwts. Sands Works: Sands treated (equal to 57.57 per cent. of tonnage milled), 119,623 tons; yield in fine gold, 10,259.972 ozs.; yield per ton treated in fine gold, 1.715 dwts.; yield per ton crushed in fine gold, .988 dwts. Slimes Works: Slimes treated (equal to 42.43 per cent. of tonnage milled), 88,168 tons; yield in fine gold, 3,534.756 ozs.; yield per ton treated in fine gold, .802 dwts.; yield per ton crushed in fine gold, .340 dwts. Total yield: Total yield in fine gold from all sources, 10,327.758 ozs.; total yield in fine gold per ton crushed, 3.881 dwts. Working expenditure and revenue for the quarter ended 31st October, 1912:—Estimated appropriation for Additions and Renewals Fund, £3,217 12s. 6d.; interest on debentures, £1,293 17s. 6d.; debenture guarantors' remuneration, £117 12s. 6d.; Consolidated Gold Fields share of profits for month of October, 1912, in terms of circular dated 26th September, 1912, £2,788 12s. 2d.; profits tax (estimated), £2,750; estimated total profit carried down, £36,811 3s. 11d.; total, £46,978 18s. 7d. Profit on working brought down, £40,174 16s. 8d.; add sundry revenue from water, rents, etc., £740 1s. 11d.; in respect of insurance of profits and standing charges, £6,064; total, £46,978 18s. 7d.; estimated total profit, £36,811 3s. 11d. *General Remarks.*—The amount spent during the quarter, chargeable to Additions and Renewals Fund, was: On Additions, £3,261 11s. 5d.; on Renewals, £11,118; total, £14,379 11s. 5d. No provision is made in this report for the redemption of debentures. During the current quarter 19,030,460 gallons of water were pumped from the mine, of which 5,721,660 gallons were pumped from the Western Section, as compared with 13,873,029 gallons during the previous quarter from the Eastern Section only. The amount of £6,064 shown as revenue in respect of insurance of profits and standing charges represents the amount received from the Insurance Company for claim made under Consequential Loss Policy in connection with the fire at the Knights Deep-Simmer East Joint Crusher Station, and referred to in the last quarterly report. The reduction in profits for this quarter as compared with those of preceding quarters is attributable to the disorganisation of operations consequent on the destruction of the Crusher Station. The share of profits due to The Consolidated Gold Fields of South Africa, Limited, for the month of October, 1912, shown above, is in accordance with the agreement the directors have entered into with that company, in connection with the option to purchase the Simmer and Jack East Mine. You will be asked to confirm this agreement at an extraordinary general meeting of shareholders to be held in Johannesburg on the 24th January, 1913, of which notice has been issued.

* The ore developed during the quarter, as stated above, is subject to the annual revision.

The Purification of Mine Air.

For the use of molasses and water as a spray for the purpose of purification of air in the mines, and the settlement of the dust produced in mining operations, a Mr. L. Ussher recently made a claim for the granting of patent rights, and it was opposed by the Chamber of Mines in Court before Mr. Justice Wessels last week. In giving judgment in favour of Mr. Ussher with costs, the Judge stated that it was in evidence, and was a matter well known to the Court, that for a long time past the mines had striven to obtain some means whereby the excessive dust provided by blasting in the mines could be allayed. From the evidence he had come to the conclusion that the application of molasses to the walls of a mine allays the dust and acts to a considerable degree as a prevention of the dust flying about. The applicant's evidence with regard to the efficiency of the molasses solution had been confirmed by the testimony of Mr. Tillard, the manager of the City Deep. He had stated that his mine experimented with the applicant's process for about two months and then determined to use it. It had now been in use for some eight months, and Mr. Tillard was of opinion that it helped very materially to solve the dust problem in the mine, that in his (Mr. Tillard's) opinion the addition of molasses to water tendered very greatly to increase the effectiveness of the measures for the prevention of dust by means of water sprays. Mr. Justice Wessels therefore was obliged to conclude that the applicant's process was an invention in so far as it did assist very considerably in allaying the dust in the mines and that in the opinion of experts on a very large mine like the City Deep it was a process which it was well worth continuing to use. It was clear that this invention had the capacity of causing the dust, instead of flying about in the mine, to adhere to the walls of the passages and drives. Under these circumstances it would be wrong to deny the applicant the right of having his invention protected by a patent. He therefore gave judgment in favour of the applicant with costs. We must congratulate Mr. Ussher on the success of his experiments. If for a small annual expenditure it is possible for a mine to become free from dust, by the use of his process, an expenditure which should be recouped by a very considerable saving in the use of water, and a possibility of the mine being exempted from further contribution by the mining company and its employees to the Phthisis Insurance Fund, a great boon will have been conferred by him on the mining industry of the Witwatersrand.

TO CONTRIBUTORS.

The Editor invites Contributions on any subject of interest relating to mining and other industries of South and Central Africa, as also of suitable non-copyright photographs or snapshots of mining or engineering interest. Subject to special arrangement, the scale of remuneration for all articles inserted is at the rate of Two Guineas per page, and 5/- for every photograph. No responsibility can be accepted for safe transmission, but anything that may be submitted that is not accepted will be returned if a stamped and directed envelope is enclosed for the purpose.

The Week's Company Meetings.

NOURSE MINES, LIMITED.

Better Profits Expected.

Improving Position.

Labour Outlook.

The sixteenth annual meeting of shareholders in the Nourse Mines, Ltd., was held on December 4 at the Corner House. Mr. H. C. Boyd, chairman, presided. There also were present Messrs. E. J. Renaud, S. C. Black, W. T. Graham, H. J. McCormack, F. H. Barry, H. Eckstein, C. Meintjes, J. L. Jourdan, J. H. Rainier, B. Moses, W. H. B. Frank, F. L. Brown, and W. H. Dawe. The representation was £461,822 of an issued capital of £827,821.

The Chairman's Speech.

The Chairman said: From the reports and accounts for the year ended the 31st July, which are now submitted for your approval, you will have seen that the profit for the period amounted to £243,200 9s. 6d. Taken as a whole, this does not compare favourably with the profit for the previous twelve months, being £7,525 8s. less, but I would direct your attention to the more recent results which have been obtained, as they reflect a position greatly changed for the better. During the first half of the twelve months under review, owing to unsatisfactory underground conditions, the tonnage crushed was low, costs were excessive, and the profits were comparatively poor, averaging £18,429 monthly. In the latter months, many difficulties were overcome, and the organisation underground was greatly improved. There was a considerable increase in the tonnage crushed monthly, a steady decrease in the costs per ton, which for July were 20s. 7d. per ton, and a corresponding increase in profits which for the last four months of the year averaged just over £25,000 monthly. There has been further reduction in costs during the current year, October showing the best results, 19s. 11d. per ton. By comparison, the reduction is actually greater than appears, as the development charge has, since the beginning of the current financial year, been raised by 6d. to 3s. per ton. The year's profits had to meet heavy charges on capital account, amounting to just under £70,000, being the balance unprovided for at the 31st of July, 1911, and special expenditure for the year underground and on the surface, as detailed in the manager's report, while there were small payments in connection with property and rights acquired, as explained in th directors' report.

Reduction in Dividend.

It was with extreme reluctance that the board decided to reduce the dividend declared in July to 5 per cent., but the figures published at the time regarding the company's financial position must have made it clear that the decision was a wise one. It may be mentioned that the July profit was better than was expected when the dividend declaration was made; but even so, after providing for the dividend and current liabilities, the indebtedness of the company at the 1st of August amounted to £14,741, and we were faced with further expenditure on capital account amounting to some £43,000, about half of which was for connecting the South Nourse shaft with the batteries, and the rest mainly for underground expenditure necessary for the general concentration scheme towards which we are working. It had been proposed to charge this work to capital account, as it consisted mainly of drives and connections off the reef which would not expose ore, but would be in the nature of permanent passage ways. On further consideration, however, the board decided to charge all this underground expenditure to working costs, and this course has been followed since the beginning of the current financial year. The actual expenditure on development for each month has been charged out, but if, for any reason it has not been possible to accomplish work to the value of a sum equivalent to 3s. per ton milled, that amount has been charged against the month's profits.

Economies Effected.

Owing to reduction in working costs this year, this additional charge has not been felt. Capital expenditure during the first quarter of the current year only amounted to £247, and there remained about £23,000 to be spent chiefly on the above-mentioned work in connection with the South Nourse Shaft. As the manager points out, we intend, as soon as possible, to concentrate as much of the hauling as possible at this shaft. I dealt with this important matter at some length at the last annual meeting. In connection with the reduction in working costs, the chief economies have naturaly been effected underground, where the bulk of the money is spent. In January it cost us £38,400 to mine 61,780 tons, or 14s. 10d. per ton milled, while 67,196 tons were mined in October at a cost of £32,936 or 11s. 8¼d. per ton milled. One of the main directions in which this saving has been effected has been in the cost of breaking ground by machines. During October it cost 5s. 3d. to break a ton of rock with large machines, a reduction of 1s. 2d. per ton compared with January, and small machines averaged 6s. 7d. per ton, less than half of what it cost in the beginning of the year. It should be explained that the tonnage broken by small machines in October was about three and a half times as much as it was in January; on the other hand the large machine tonnage decreased by about 26 per cent. Hand-stoping costs have remained much the same; if anything, there has been a tendency to increase. I give these figures at the special request of certain shareholders. Recalculation of the ore reserves shows that at the close of the year the average value was the same as at the end of the previous year, viz., 6.6dwts. per ton, but that there was a decrease of 81,705 tons. Proportionately, it is not a very large decrease, and, as the consulting engineer explains in his report, it is more apparent than real. Areas formerly included in the reserves had been found in the course of mining to be cut off from the current workings by faults, and it was therefore considered wiser, temporarily at least, to exclude them from the reserves. Virtually the position is much the same as at the end of the previous year. That it should be so must be considered satisfactory, for it is plain from the figures of recovery per ton that we have been mining a grade somewhat in excess of the average value of the ore reserves at the 31st of July, 1911. This has, however, been counteracted by the fact that on the whole the values disclosed during the year have also been higher than usual.

No Straining.

It must not be supposed that we have in any way strained after a high milling grade; we have taken the ground very much as it came. It will be apparent now that working costs have been reduced, as we expected they would be, that we are in a position, while milling a grade more nearly reflected by the reserves, to make at least as good profits per ton as last year. The manager's report details the principal features of the year's development work, probably the most important of which was the connection by means of a long crosscut on the 20th level of the Nourse Deep and South Nourse sections of the property. During the current year there has been no marked change in development results, which on the whole continue fair. Progress is being made with the concentration scheme underground, and it may be mentioned that even in the early stages improvements in the cost of tramming and shovelling ore are apparent, the tonnage handled per boy having increased by about 25 per cent. during the past six months, the costs per ton showing a satisfactory decrease.

Loss of Natives.

The consulting engineer states in his report that a continuance of the improved profits earned in the latter months of the year can be reasonably expected, provided the labour force is maintained. There is no reason to change that opinion to-day. As you have seen, the profits of the current financial year have been satisfactory. The October profit was lower than the recent average owing to decreased recovery, but this may be regarded as purely temporary. Between July and October we lost eight hundred boys, and it is highly creditable to the management that profits were maintained so satisfactorily during that period, while development was in no way restricted. During last month the decrease really began to make itself felt. The actual numbers employed diminished seriously, and untrained boys took the place of experienced ones, with the consequence that only 51,300 tons were milled, a decrease compared with October of 5,000 tons. There is every indication, however, from the present report about labour that this is a passing phase, and we may expect to be provided satisfactorily in this respect very shortly. In this connection it should be mentioned that we have

joined the Native Recruiting Corporation, through the operations of which we anticipate considerable economy will be effected in the cost of procuring labour. New articles of association will shortly be submitted for your approval. Provision has to be made for holding the annual meetings later in each year, and the opportunity is being taken of bringing the articles into conformity with the Company Law. It is also proposed to end the company's financial year on the 30th of June, instead of the 31st of July, as at present, that date being more convenient in many respects. The board wish to place on record their high appreciation of the services rendered by the consulting engineer, Mr. Madew; the manager, Mr. Barry; and Mr. Sherwell, who acted while Mr. Barry was absent on leave. To them and the whole staff we are indebted for the marked improvement shown in the affairs of the company.

The report was adopted.

Messrs. H. C. Boyd, R. W. Schumacher, E. J. Renaud, Henry Nourse, S. C. Black, A. G. Gill, F. D. P. Chaplin, and W. T. Graham were re-elected directors.

Messrs. J. N. Webb and C. L. Andersson were re-elected auditors.

Contracts Open.

The South African Railways invite tenders for the following:—(1) Timber: Sawn pitch pine logs, Oregon pne logs and deals, strictly clear pine boards, carpenters' clear pine and planed shelving.—Due 10th December, 1912. (2) Galvanised Steel Sheets, 656¼ tons.—Due 31st December, 1912. (3) Pietermaritzburg—Steelwork for extension of machine shop.—Due 31st December, 1912. (4) Electrical wire.—Due 31st December, 1912. (5) Wheelbarrows, 3,750.—Due 7th January, 1913. (6) Bags: Grain, coal, etc., 214,600.—Due 14th January, 1913.

The Secretary of the Tender Board, South African Railway Offices, Johannesburg, invites tenders for the erection and completion of Post Office Buildings at Germiston Station (17th December). Also for the quarrying and breaking of 60,000 cubic yards of stone ballast at various points on the above railway (10th December).

The Benoni Municipality invites tenders for the supply of produce, etc., as required by the Municipality for the period of six months ending 30th June, 1913 (12th December).

The Middelburg Municipality invites tenders for the supply of oil for the street lamps for the period of twelve months, commencing on the 1st January, 1913. The said oil to be delivered at the Municipal Offices: Petrol (naphtha), about 60 gallons per month at per gallon (19th December).

The Municipal Council of Johannesburg invites tenders for the supply of forage (9th January).

The Springs Municipality invites tenders for the supply of one four-wheeled slop van, to be drawn by four oxen (12th December).

The South African Railways and Harbours invite tenders for galvanized steel sheets (December 31).

The South African Railways and Harbours invite tenders for the supply of 3,750 wheelbarrows (January 7).

The Germiston Municipality invites tenders for the supply of materials required in connection with the trackless tramways scheme, as follows:—(1) Rail-less cars and tower wagon; (2) cables, trolley wire, feeder pillars, span wire, etc.; (3) converters, transformers, switch gear, etc.; (4) overhead fittings, ears, insulators, strains, frogs, crossings, etc.; (5) poles, bracket arms, scrolls, etc. (February 3).

The Secretary to the Tender Board, S.A.R. Headquarter Offices, Johannesburg, invites tenders for the supply of hardwood logs and planks (January 14).

The Municipal Council of Johannesburg invites tenders for the erection of fencing, entrances and gates around eastern portion of Fordsburg Park (Dec. 11).

The Middelburg Municipality (Transvaal) invites tenders for the supply of oil for the street lamps for the period of twelve months, commencing on the 1st January, 1913; the said oil to be delivered at the Municipal Offices: Petrol (naphtha), about 60 gallons per month at per gallon (Dec. 19).

The Secretary to the Tender Board, South African Railways, Johannesburg, invites tenders for the quarrying and breaking of 60,000 cubic yards of stone ballast at various points on the Nelspruit-Graskop railway (Dec. 10); also for the supply of 31,800 metallic filament lamps for train lighting purposes (Jan. 21, 1913).

Tenders Accepted.

The South African Railways have accepted the following tenders: (1) Lindley Road-Senekal Line: Platelaying, etc. Messrs. Anderson Bros., Bethlehem, at approximately £8,762. (2) Alkmaar-Elandshoek Deviation, No. 22. Messrs. Jansen and Williams at (approximately) £2,360 4s. 2d. (3) Bricks for Bandolier Kop Line. Messrs. The Consolidated Rand Brick, Pottery and Lime Company, Johannesburg—Building bricks, 326,000 at 42s. 6d. per 1,000—£692 15s. (excluding railage). (4) Grootfontein-Laingsburg Deviation, No. 1: Contracts Nos. 1 and 2. Mr. B. Ferraris at No. 1, £3,325; Mr. B. Ferraris at No. 2, £1,831 5s. (approximately). Contract No. 3: Mr. Wm. Ross at (approximately) £1,540 (exclusive of cost of sand and water). (5) Port Elizabeth: Additional storeys and renewals of roofs, etc. Messrs. Walker and Co. at £1,932. (6) Buffalo Hides: Approximately 51,150 sup. ft. Messrs. W. and J. Martin, Glasgow, at 1s. 1d. per foot, less 2½ per cent. discount; and Messrs. J. Dixon, Sons, and Taylor, London, at 1s. 0¼d. per foot. Order to be divided (approximately). (7) Pretoria New Station: Lease of fruit stall. Messrs. J. Bogiazis and Co. at £16 per month. (8) Jagersfontein Cartage Contract. Mr. H. Gabbe at 3s. 3d. per ton. (9) Blue Printing Paper, etc. Mr. R. Ehrmann, Johannesburg. (10) Berg River Bridge (erection). Messrs. Ritchie and Greener, Johannesburg, at (approximately) £624 10s.

Companies in Liquidation.

Kelly and Co., Ltd., H. (voluntary), November 12th; meeting at 17, Royal Chambers, Johannesburg, on November 27th. George MacKenzie, liquidator.

Pretoria Industries, Ltd., The; first and final liquidation and distribution account, Master's Office, Pretoria, for fourteen days from November 19th. A. P. Brugman, liquidator.

Goldsmid, Limited; a separate meeting of creditors and contributories, A.R.M.'s Office, Johannesburg, December 3rd.

Witbank Gold Rights, Ltd. (voluntary): a general meeting will be held at 4-8, Trust Buildings, Johannesburg, on December 30th. J. Fleming Orr and Arthur Pratt, liquidators.

General Investment and Trust Co., Ltd., The (voluntary); a general meeting will be held at 4-8, Trust Buildings, Johannesburg, on December 30th. Robert Niven and J. Fleming Orr, liquidators.

Globe Theatre, Ltd., The; first and final liquidation account and plan of contribution, Master's Office, Pretoria, and A.R.M.'s Office, Johannesburg, for fourteen days from November 23rd. A. Kemp, liquidator.

Wolvefontein Estate and Gold Mining Syndicate, Ltd.; a general meeting will be held at 19a, Simmonds Street, Johannesburg, on December 24th. H. J. Lamb, liquidator.

Wax Burner, Ltd., The (voluntary), November 14th. R. W. Ward, liquidator.

South Bonanza, Ltd. (voluntary), November 15th. Henry Crawford Boyd, liquidator.

Bonanza Deep, Ltd. (voluntary), November 15th. Henry C. Boyd, liquidator.

South Ferreira, Ltd. (voluntary), November 15th. Henry C. Boyd, liquidator.

Ferreira Gold Mining Co., Ltd. (voluntary); a general meeting will be held at The Corner House, Commissioner Street, Johannesburg, on January 15th. H. A. Rogers, H. C. Boyd, E. J. Renaud, and W. H. Dawe, liquidators.

South Robinson, Ltd. (voluntary), November 15th. H. C. Boyd, liquidator.

The Bloemhof Motor Car Syndicate, September 4th: claims to be filed and debts paid not later than December 31st. Stefanus J. van Wijk, liquidator.

The Haugregil Gold Mining Co., Ltd.; a general meeting will be held at the office of E. W. Nash, liquidator, Pilgrims Rest, on January 7th, 1913.

De Belfast Kooperatieve Vereniging, list of contributories, Master's office, Pretoria, and at Belfast for 21 days from November 15th.

The Zaodrivier Exploration Co., Ltd., general meeting will be held at Lewis & Marks Buildings, President Street, Johannesburg, on December 12th.

The L. & B. Exploration Co., Ltd.; general meeting, Lewis & Marks' Buildings, President Street, Johannesburg, on December 12th.

Of Interest to Mining Men.

TENDERS are hereby called for the purchase of the four Mynpachten situate on the Government Farm Mooigelegen, No. 92, District Krugersdorp, and registered in the names of P. M. B. DUNBAR, B. C. SIMON, H. D. CROZIER, and G. H. COKE, being Nos. 596/9 respectively.

The above Mynpachten comprise the whole area of the Farm, some 83 Morgen in extent, equalling about 120 Gold Claims in area. They are immediately north of Lewisham Township adjoining Luipaardsvlei Station. The West Coronation Reef outcrops within the northern boundary of the Farm, and the ground is traversed by the Government Reef and those series between the latter and the Main Reef.

The Licence fees amount to £43 10s. per annum.

Terms will be cash against transfer.

Further particulars of work done on the ground, assay results, etc., can be obtained from the undersigned, by whom tenders will be received up to January 10th, 1913. The highest or any tender not necessarily accepted.

CROZIER & FINCH SMITH,
Solicitors, etc.,
Permanent Buildings,
Harrison Street,
JOHANNESBURG.

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21st ANNIVERSARY

NUMBER

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The Messina (Transvaal) Development Co., LIMITED.

DIRECTORS' REPORT.

Directors.
ARTHUR M. GRENFELL (Chairman), R. J. FRECHEVILLE, JOHN S. P. SAMBORNE, JOHN P. GRENFELL.

Agent in Johannesburg.
CHAS. STUART.

Consulting Engineer.
J. M. CALDERWOOD.

Mine Manager.
J. ALLAN WOODBURN.

Solicitors.
SURTEES, PHILLPOTTS & CO.

Auditors.
ALLEN, BIGGS & CO.

Bankers.
CHAPLIN, MILNE, GRENFELL & CO., LIMITED.

Secretary.
A. A. KELSEY, F.C.I.S.

Registered Offices.
3, PRINCES STREET, LONDON, E.C.

The Directors have pleasure in submitting herewith their Seventh Annual Report, and audited Statement of Accounts, for the year ended 30th June, 1912.

PROPERTY.—The property consists of the freehold and leasehold farms detailed in the Consulting Engineer's Report, representing a total of 22,432 acres, standing in the Company's books at a cost of £141,671.

The 200 Coal Claims referred to in the last Annual Report have, after investigation, been abandoned, and an option has been secured over a large block of coal claims situated about 25 miles south-west of Messina.

CONSULTING ENGINEER'S REPORT.—The Annual Report of Mr. J. M. Calderwood, the Consulting Engineer, is presented herewith. The attention of the Shareholders is especially called to this comprehensive Report.

In view of the completion, at an early date, of the Railway now under construction, the operations at the Mill were limited to treating ore obtained chiefly from development, and efforts were concentrated on increasing the reserves of ore by opening up the mine at further depth as rapidly as possible so as to be in a position to undertake a large output on the completion of the railway.

DEVELOPMENT.—In regard to the development on the North Lode, since last year's report, the Consulting Engineer states :—

> "A most important enrichment occurred at 5th Level, whereby the granite has become highly altered and mineralized from wall to wall of the lode for a width of 75 feet. A cross-cut through the ore body gives an average assay value of 19.5 per cent. copper for this width, the values being fairly uniform throughout.
>
> "As will be noted from the table of assay values, the 5th Level, for 236 feet sampled, averages 23.6 per cent. copper, which is an exceptionally high average for such a continuous footage."

And further, with regard to the 8th Level :—

> "The Shaft and hanging wall portion assays 18 per cent. copper for a distance of 120 feet, and the foot wall portion assays 13.7 per cent. copper for 150 feet sampled. Since the end of the year a cross-cut has been put through the foot wall portion, exposing lode for 50 feet in width, having an average assay value of 12½ per cent. copper. The hanging wall portion at Shaft shows a width of 27 feet of ore, assaying 17 per cent. copper—making with the foot wall portion a total width of 77 feet of ore, averaging 14 per cent. copper."

The development of the lodes in the mine has been equally satisfactory.

Owing to the satisfactory results obtained during the year, and the favourable outlook of the mine generally, and in order to further increase the output of ore to 12,000 tons per month, your Directors authorised the sinking of another three-compartment shaft adjacent to No. 4 Shaft.

A total of 6,781 feet was driven, raised and sunk in the various workings. Of this footage 2,500 feet has been actually driven on the lodes, of which 1,533 feet gave an average assay value of 13.1 per cent. copper over a width of 60 inches. This is regarded as one of the most satisfactory features of the development operations during the year.

ORE RESERVES.—The estimate of actual ore at 30th June, 1912, blocked out within the developed sections, amounts to approximately 170,000 tons of 10 per cent. copper, an increase of 50,714 tons of ore, after allowing for the extraction of 10,347 tons during the year. The Probable and Possible ore is estimated at a further 330,000 tons down to 10th Level, making a total of 500,000 tons of ore.

The extension of Ancient Workings at surface to the east and west of the present developed section of the mine, and also the satisfactory results obtained in the same directions underground by driving on the lodes, indicate that in the near future a large tonnage of ore will be added to the known reserves.

A new Concentrating Plant is now being erected, designed to handle about 300 tons of ore per day, and this together with additions to existing mill will be capable of dealing with 10,000 tons of sorted ore per month.

RAILWAYS.—The extension of the Pretoria-Pietersburg Line from Bandolier Kop to Louis Trichardt has now been opened for traffic, and the continuation of the line to Messina is being actively carried on by the Government and should reach the Messina Mine by May, 1913.

COAL.—The development of the coal bearing area held under option and through which the railway line will pass, has opened a seam of workable quality, suitable for steaming and smelting purposes.

In accordance with the Articles of Association, Mr. R. J. Frecheville retires from the Board, and being eligible, offers himself for re-election.

The Auditors, Messrs. Allen, Biggs and Co., also retire, and offer themselves for re-election.

By order of the Board.

A. A. KELSEY,
Secretary.

3, Princes Street, London, E.C.,
23rd October, 1912.

The Messina (Transvaal) Development Company, Limited.—Continued.

Dr. BALANCE SHEET, 30th June, 1912. Cr.

To Capital—					By Mining Property—				
1,000,000 Shares of 5s. each ...		£250,000	0	0	As per last Balance Sheet ...			£141,671	15 5
661,804 Shares issued			£165,451	0 0	,, Prospecting—				
338,196 Shares unissued					As per last Balance Sheet ...	18,281	0 4		
1,000,000					*Add* Expenditure during year ...	1,953	9 4		
								20,234	9 8
					.. Mine Development	45,943	10 1		
,, Six per cent. Debenture Stock			250,000	0 0	.. Sinking Shafts	28,616	9 0		
.. Share Premium Account—								71,559	19 1
As at 30th June, 1911	41,865	13 2			.. Building, Machinery, Plant, etc.	38,836	0 5		
Less Discount on Debenture Stock Issue	25,000	0 0			.. Live Stock, Vehicles, Tools, etc.	2,809	10 8		
			16,865	13 2				41,645	11 1
,, Bills Payable			15,000	0 0	.. Ore in Transit and on Hand ...			17,976	17 8
,, Sundry Creditors—					,, Ore Untreated, including Tailings and Slimes			18,083	12 8
South Africa	25,890	11 7			.. Stores on Hand			6,917	0 11
London	1,926	14 5			,, Sundry Debtors and Payments in Advance			1,572	15 5
			27,817	6 0	.. General Charges for Allocation			4,913	17 6
					,, Railway Account—Balance of Outlay			9,084	3 1
					.. Cash at Bankers, in Hand and on Deposit			109,651	0 0
					.. Profit and Loss Account—				
					As at 30th June, 1911	26,352	14 1		
					Less Reserve for Redemption of Debenture Stock	8,195	18 10		
						18,156	15 3		
					Balance as per account annexed	10,666	1 5		
								28,822	16 8
			£475,133	19 2				£475,133	19 2

Dr. Profit and Loss Account for the Year ended 30th June, 1912. Cr.

To Johannesburg and Mine Expenses—					By Ore Realisation Account ...		£29,761	5 8
Mining, Freight and Transport	£19,601	15 7			,, Transfer Fees		33	15 6
Development Redemption ...	2,586	15 0			,, Balance carried down		4,674	11 4
Depreciation on Machinery, Plant, etc.	2,697	17 5						
Insurance and Farm Taxes ...	443	14 5						
Legal Expenses	50	19 8						
Agents' Salary and Local Board Fees	810	0 0						
General Charges, Cables, Postage, Stationery, Printing, etc. ...	842	2 6						
Audit Fee	52	10 0						
Exchange and Commission ...	911	3 0						
			27,996	17 7				
.. London Expenditure—								
Directors' and Trustees' Fees ...	1,408	17 2						
Salaries and Rent	750	0 0						
Travelling Expenses	88	16 6						
General Charges, Cables, Postage, Stationery, Printing and Advertising	1,666	4 6						
Interest and Commission ...	2,537	16 9						
Audit Fee	21	0 0						
			6,472	14 11				
			£34,469	12 6			£34,469	12 6
To Balance brought down ...			4,674	11 4	By Balance carried to Balance Sheet		10,666	1 5
,, Interest on Debenture Stock ...			5,181	17 3				
,, Expenses *re* Increase of Capital...	200	11 8						
.. Expenses *re* Issue of Debenture Stock	609	1 2						
			809	12 10				
			£10,666	1 5			£10,666	1 5

A. A. KELSEY, Secretary.

A. M. GRENFELL,
JOHN S. P. SAMBORNE,
Directors.

We beg to report that we have audited the Balance Sheet of the Messina (Transvaal) Development Company, Limited, dated the 30th June, 1912, and above set forth, in which is incorporated the South African Balance Sheet certified by the Local Auditors. We have obtained all the information and explanations we have required.

In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Company's affairs according to the best of our information and the explanations given us and as shown by the Books of the Company in London, and the certified Balance Sheet from South Africa.

147, Leadenhall Street, E.C.,
18th October, 1912.

ALLEN, BIGGS & CO.
Chartered Accountants.
Auditors.

RAND KLIP, LIMITED.

(Incorporated in the Transvaal.)

DIRECTORS' REPORT for the Year ended 30th June, 1912.

Submitted at the Twelfth Ordinary General Meeting of Shareholders, held in the Board Room, National Bank Buildings, Simmonds Street, Johannesburg, on Wednesday, the 27th day of November, 1912, at 11 a.m.

GENTLEMEN,

Your Directors beg to submit their Report, together with audited Balance Sheet of the Company, for the year ended 30th June, 1912.

CAPITAL.

The Capital of the Company is £475,000, divided into 475,000 shares of the nominal value of £1 each, of which 432,336 shares have been issued, and 42,664 shares are in reserve.

PROPERTY.

Your property consists of the unproclaimed freehold farm "Klipfontein" No. 22, in the District of Boksburg, in extent 3,451 morgen 82 square roods.

OPERATIONS.

Sinking operations in the East Shaft continued throughout the year, the Main Reef series being intersected on 7th June at a depth of 1,804 feet 6 inches.

The reef exposed at this point, carried a value of 2·18 dwts. over a width of 54 inches, or 2·88 dwts. over 36 inches, which appears to be the width of the Main Reef at this point.

FINANCIAL.

The nett expenditure on Capital Account for the year was £61,040 2s. 8d., leaving a balance of Capital in hand at the 30th June, 1912, of £64,867 19s. 2d.

DIRECTORS.

You will be asked to confirm the appointment of Messrs. C. R. Pinder, J. Andrew Cohen and A. G. Gill as Directors of the Company in place of Sir George Farrar, Bart., D.S.O., Messrs. F. R. MacDonald and W. H. Dawe, respectively, resigned.

In terms of the Articles of Association, Messrs. A. G. Gill and J. Andrew Cohen retire from the Board, and, being eligible, offer themselves for re-election.

AUDITORS.

You will be asked to appoint Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors, Messrs. Thos. Douglas and F. W. Diamond & English.

WM. DALRYMPLE, *Chairman.*
G. W. HIGGINS,
A. G. GILL,
H. ECKSTEIN,
GEO. R. AIRTH,
C. R. PINDER,
Directors.

Johannesburg, 20th September, 1912.

Dr. BALANCE SHEET, 30th JUNE, 1912. *Cr.*

To Capital:				By Property			£154,181 0 7
Registered, 475,000 shares of £1 each...	£475,000 0 0			,, Shafts			142,382 11 3
Less in reserve, 42,664 shares of £1 each	42,664 0 0			,, Equipment	£64,412 4 8		
Issued, 432,336 shares of £1 each.		£432,336 0 0		,, Live Stock and Vehicles	391 0 0		
NOTE.—In terms of the Company's Articles of Association, the Directors are authorised to increase the Capital of the Company by 175,000 shares, and in addition, from time to time by 25 per cent. of the Issued Capital for the time being.				,, Furniture	347 3 6		65,150 8 2
,, Premium on Shares—				,, Kleinfontein Group Central Administration—			
Premium of 5s. per share on 216,168 Working Capital Shares		54,042 0 0		Participation Account			8,587 1 0
				,, Kleinfontein Power Association—			
				Share of Cost of Power Station ...			32,906 3 9
				,, General Expenditure—			
				As per Balance Sheet, 30th June, 1911	12,285 19 11		
				Add Expenditure for the year as follows:—			
				Directors' Fees	£500 0 0		
				London Committee and Agency Fees	450 0 0		
				Auditors' Fees	105 0 0		
				Secretarial Fees and Rent	510 0 0		
				Stationery, Printing and Advertising	193 0 6		
				Subscriptions, Cables, etc..	135 7 5		
				Sundry General Expenditure, Head and London Offices	1,241 7 9		
				Mine General Expenditure	£6,246 1 3		
				Less Sundry Revenue ...	758 12 4		
					5,487 8 11		
					£8,622 4 7		
				Less Interest	2,605 8 5		
					6,016 16 2		18,302 16 1
							£421,510 0 10
				,, Balance carried down, being Capital unexpended at 30th June, 1912 ...			64,867 19 2
		£486,378 0 0					£486,378 0 0
To Balance brought down ...		£64,867 19 2		,, Shares in other Companies—			
,, Sundry Creditors		1,843 16 2		Witwatersrand Native Labour Association—83 Shares of £1 each, 12s. paid up and 25s. deposit	£153 11 0		
NOTE.—There is further liability in respect of Shares subscribed for at 30th June, 1912:—				Kleinfontein Group Labour Organisation—Contribution towards Working Capital	372 0 0		525 11 0
8s. per Share on 83 Witwatersrand Native Labour Association Shares of £1 each	£33 4 0			,, Steel Setts for Shaft			6,603 1 11
				,, Payments in Advance	334 3 6		
				,, Sundry Debtors	4,947 10 7		5,281 14 1
				,, Cash—			
				On Fixed Deposit with accrued Interest	48,283 2 9		
				On Current Account and in hand ...	6,018 5 7		54,301 8 4
		£66,711 15 4					£66,711 15 4

GEO. W. AUSTIN, Acting Secretary.

WM. DALRYMPLE,
G. W. HIGGINS, Directors.

To the Shareholders, Rand Klip, Limited.

We have audited the above Balance Sheet with the Books and Vouchers of the Company for the year ended 30th June, 1912. We have obtained all the information and explanations we have required. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the Company's affairs according to the best of our information and the explanations given us and as shown by the books of the Company.

F. W. DIAMOND & ENGLISH,
Incorporated Accountants,
THOS. DOUGLAS,
Chartered Accountant,
Auditors.

Johannesburg, 6th September, 1912.

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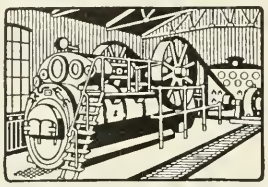

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NOTICE OF MEETING.

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To receive the Directors' Report and Statement of Accounts to the 30th June, 1912.

To elect Directors in the place of those retiring by rotation

To elect Auditors and fix their remuneration, and

To transact the business of an Ordinary General Meeting.

Holders of Share Warrants to Bearer wishing to attend and vote at the above Meeting must, three days at least previous thereto, deposit their Warrants, with all unpaid Coupons attached, at one of the following places:—

London:—257 Winchester House, E.C.

Berlin:—General Mining and Finance Corporation, Ltd., Markgrafenstrasse, 51.

Paris:—General Mining and Finance Corporation, Ltd., 29, Rue Taitbout.

Where they will receive a certificate entitling them to attend and vote at the Meeting in respect of the shares represented by the Warrant or Warrants so deposited.

By Order.

J. V. BLINKHORN,
Local Secretary.

P.O. Box 1173,
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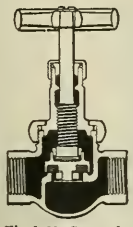

Fig. 1403—Screwed Ends.
Fig. 1409—Flanged.

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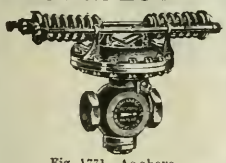

Fig. 1771—As above.
Fig. 1770—Flanged.
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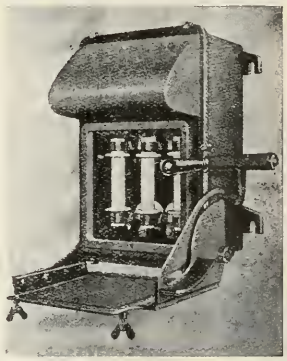

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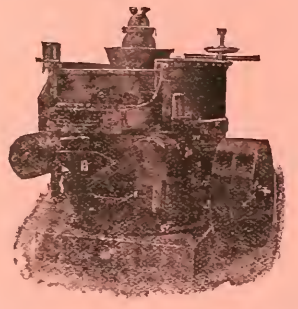

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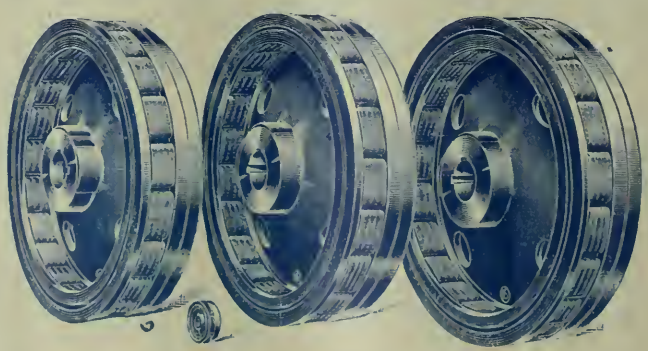

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